

Exploring Life History Strategies in Adolescence; Attachment, Personality, and Bullying

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Abstract

The purpose of the present study was to apply a component of Evolutionary Theory, termed Life History Strategy (LHS), to the study of bullying. The current study aimed to highlight the relationship between environmental pressures, slow and fast LHS, and bullying subtypes. A sample of 261 participants (125 males and 135 females) between the ages of 12 and 18 ($M = 14.67$, $SD = 1.84$) was collected from adolescents participating in extracurricular activities. Participants first filled out a questionnaire package assessing: Life History Strategy, bullying frequency, socio-economic status, sexual activity, personality, and attachment. Participants were then randomly assigned to an experimental group, which were primed with a mortality cue, or a control group, which were not primed. Following the priming, participants responded to six hypothetical bullying scenarios. It was predicted that participants with a fast LHS are more likely to use direct forms of bullying and participants with a slow LHS are more likely to use indirect forms of bullying. The results revealed that the prime manipulation was not effective; however, participants with a fast LHS did engage in more verbal bullying ($F(1, 261) = 5.27$, $p < .05$) with physical bullying approaching significance. Participants with a fast LHS also had higher levels of avoidant ($F(1, 261) = 42.54$, $p < .05$) and anxious ($F(1, 261) = 15.56$, $p < .05$) attachment styles. In the present study, individuals with a fast LHS engaged in more direct forms of bullying. These results suggest that environmental pressures can increase the use of bullying as an adaptive strategy. This further highlights the need for interventions to incorporate elements of cost/benefit models that consider bullying as an adaptive strategy which is utilized differently based on environmental circumstances.

Keywords: bullying, Evolutionary Theory, Life History Theory, mortality prime

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Chapter 1: Introduction

Life History Theory (LHT) is a component of evolutionary theory that aims to investigate how environmental pressures influence individual differences in allocation strategies and their associated behaviours. LHT has been used to examine individual differences in areas such as personality (Manson, 2015), sexual activity (Ellis, et al., 2009; Belsky et al., 2012), reproductive timing (Griskevicius et al., 2011*a*), risk-taking (Griskevicius et al., 2011*b*), and attachment (Del Giudice, 2009). However, there is currently minimal research that examines bullying through a Life History approach. Therefore, the present study aimed to contribute to this established literature by applying Life History Theory to investigate the relationship between environmental cues and three major constructs: bullying, personality, and attachment.

Adolescence is a transitional period marked by an increase in risky behaviours. For example, bullying prevalence rates increase around the age of 14 (Volk, Dane, & Marini, 2014). This is a critical time for adolescents to establish their position in the social hierarchy (Ellis et al., 2012); therefore it is pertinent to examine the function of bullying for adolescents. Bullying is a global phenomenon that affects millions of youth each year with serious consequences that include mental illness, self-harm, and attempted suicide (Tippett & Wolke, 2014). Bullying may manifest in two main forms: direct and indirect, which are then further divided into subtypes. Direct bullying is overt and involves explicit acts of aggression (Marini, Dane, Bosacki, & YLC-CURA, 2006). Direct bullying subtypes include physical bullying (i.e. kicking and punching), which is primarily utilized by males and verbal bullying (i.e. name calling and teasing), which is used by both genders (Volk et al., 2014). Indirect bullying is covert and involves more concealed and anonymous acts of aggression (Marini & Bosacki, 2006). Indirect bullying

subtypes include relational bullying (i.e. gossip and social exclusion), which is primarily utilized by females (Volk et al., 2014). With new technology constantly being developed, it is questioned whether cyberbullying (i.e. bullying that occurs in the virtual world) is an extension of traditional bullying or whether it is a separate phenomenon. Most research supports that there is significant overlap between cyberbullying and traditional bullying as to not distinguish them as separate forms of bullying (Brighi, Guarini, Melotti, Galli, & Genta, 2012). Therefore, in the present study, cyberbullying will be considered as a subtype of indirect bullying because it is often concealed and anonymous.

Traditionally, bullying has been considered as one of the many negative outcomes of a maladaptive development; however, due to its high prevalence in many countries across the world and its presence in multiple historical periods, researchers have begun to examine bullying from an evolutionary perspective (Volk, Camilleri, Dane, & Marini, 2012). An evolutionary frame work proposes that as a result of natural selection, certain behaviours are more adaptively advantageous because they increase the likelihood of survival and reproductive success in response to environmental pressures. Following this line of thought, researchers have suggested that bullying for some people has evolved to be an adaptive strategy because, through the use of aggression, it has led to significant gains in resource acquisition and reproductive advantages (Volk et al., 2012).

Recently, there has been an attempt to re-define bullying from an evolutionary perspective that emphasizes its adaptiveness (Volk et al., 2014). Bullying is newly defined as an “aggressive goal-directed behaviour that harms another individual within the context of a power imbalance” (Volk et al., 2014, p328). This new definition encompasses three main components:

1) bullying is goal-directed, supporting the notion that bullying is intentional and an act of instrumental aggression; 2) bullying can cause significant harm, even from a single incident of bullying, such as cyberbullying; and 3) the relational context of bullying must be characterized by a power imbalance, in which one individual has dominance (i.e. physical strength, popularity) over the other (Volk et al., 2014). This recent definition is supported by empirical data and is more suitable for the recent bullying theories that incorporate an evolutionary approach. With so many youth involved in bullying worldwide and with the severe consequences of bullying, and given there is evidence to suggest bullying is an evolved adaptation, it is essential to understand the relationship between environmental circumstances, slow and fast LHS, and bullying subtypes.

Another construct that has been advanced by research using an evolutionary perspective is personality. It is relevant to study personality from an evolutionary perspective as variation in personality is associated with different strategies to achieve evolutionary related goals, such as gaining social status or obtaining a mate (Buss, 2009). In particular, Life History Theory has been applied to study individual differences in many areas, including personality. Previous research has used Life History Theory to predict variation in the Big Five personality traits (Manson, 2015). Recently, this research has been expanded to use Life History Theory to predict variation in a newer personality questionnaire based in evolutionary principles, termed the HEXACO (Ashton, Lee, & Chongnak, 2000). The current study aimed to contribute further to the investigation into the relationship between Life History Strategies and personality variation.

Attachment Theory was first established by John Bowlby (1969), in which he proposed that the development of infant-parent attachment is formed based on the quality and consistency

of parental care. He further theorized that this infant-parent attachment will form the foundation of all future attachment relationships. Through his research using the “Strange Situation” experiment, three major attachment styles emerged. The first style is secure attachment, in which the quality of parental care tends to be consistent, sensitive, and responsive. Infants with a secure attachment will use their parents as a secure base and tend to be trusting of others. The second style is anxious attachment, in which the quality of parental care tends to be inconsistent and insensitive, yet intrusive at times. Infants with an anxious attachment style tend to exhibit dependent behaviours and fear abandonment from their attachment figure (Del Giudice & Belsky, 2010). The third style is avoidant attachment, in which parental carer tends to be emotionally unavailable and insensitive to the child’s needs. An infant with an avoidant attachment style tends to be emotionally self-reliant and tends to distance themselves from others (Del Giudice & Belsky, 2010).

Researchers have investigated the function of attachment by applying an evolutionary approach (Belsky, 1997; Del Giudice & Belsky, 2010). Belsky (1997) proposed that attachment has evolved as an adaptive mechanism to ensure parental care and protection. Furthermore, Del Giudice and Belsky (2010) suggest that Life History Strategies play a significant role in the quality of parental care and the formation of infant-parent attachment. It is this role that the present study sought to explore.

Chapter 2: Literature Review

Life History Theory

A challenging task for all humans is to effectively utilize and ration their time, energy, and resources among multiple life functions. Given that time, energy, and resources are limited, it is difficult to equally allocate them to all life functions. Trade-offs must occur between the investments of resources so that some functions will have greater investment at the expense of investment in another function (Griskevicius, Delton, Robertson, & Tybur, 2011). Natural selection may have helped develop two broad allocation strategies, termed Life History Strategies (LHS), to maximize the fit between time, energy and resources expenditure and one's environment (Brumbach, Figueredo, & Ellis, 2009). Broadly speaking, these LHS can be categorized as either fast (spend more now) or slow (save more later) (Ellis et al., 2009). In order to determine which strategy to adopt, individuals evaluate their environment for cues that will signal either a longer or shorter life expectancy (Del Giudice, 2009). These environmental cues include harshness, the rates of mortality and morbidity; unpredictability, the variability in environmental risks; and resource scarcity, the availability and competition for resources (Griskevicius et al., 2011a). Once these environmental conditions are assessed, a LHS is then adopted and expressed through core traits that establish "the rates of reproduction and associated patterns of growth, aging, and parental investment (i.e. number of offspring, age of sexual maturity, age of first offspring)" (Brumbach et al., 2009, p2). Essentially, an individual's LHS will determine in which life functions to invest the majority of their time, energy, and resources.

One of the most significant investments a LHS will determine is whether to invest in current or future reproduction. This investment conflict involves deciding between investing in

somatic effort or reproductive effort. Somatic effort is the investment of resources in physical growth, bodily maintenance, and the acquisition of skills and knowledge. Reproductive effort includes the investment of resources in dating, intrasexual competition, gestation, and childcare (Griskevicius et al., 2011a). Resources that would be invested in the prolonged maturation period required for somatic effort are traded off in order to invest those resources into earlier reproduction, or vice versa (Ellis, et al., 2009). The LHS will establish based on environmental cues whether investing in somatic effort or reproductive effort is more practical. The resolution of this investment conflict will effectuate the expression of the life history strategy's core traits.

These core traits differ based on a “slow-to-fast” continuum (Ellis et al., 2009).

Individuals who live in a harsh, unpredictable, and resource scarce environment tend to adopt fast LHS, in which investment in somatic effort is traded off for investment in reproductive effort in order to reproduce as early as possible. Due to a higher mortality rate and an uncertain environment, it is more adaptive to reproduce earlier and more frequently because of their shorter life expectancy. Essentially, a fast LHS determines faster rates of reproduction, growth, and aging (Brumbach et al., 2009). Individuals who adopt a fast LHS tend to have a fast growth period, reach sexual maturity earlier, reproduce earlier, prioritize offspring quantity, and invest in short-term goals (Ellis et al., 2009; Belsky, Schlomer, & Ellis, 2012).

In contrast, individuals who live in a less harsh, more predictable, and resource plenty environment tend to adopt a slow LHS. Because their life expectancy is longer, it is more adaptive for these individuals to invest in somatic effort and delay reproduction so that when they reproduce, they are in the best position possible to raise high-quality offspring. Thus, a slow LHS determines slower rates of reproduction, growth, and aging (Brumbach et al., 2009).

Individuals who adopt a slow LHS tend to have a longer maturation period, delay reproduction, prioritize offspring quality, and invest in long-term goals (Ellis, et al., 2009; Belsky et al., 2012).

Several relevant studies have explored the interaction between environmental cues and Life History Strategies. Griskevicius et al. (2011a) conducted two studies that investigated the relationship between environmental cues, Life History Strategies, and the variation in reproductive timing. The researchers hypothesized that reproductive timing will vary depending on the individual's Life History Strategy. In these studies, mortality rate, which is the amount of deaths caused by external factors outside of an individual's control (i.e. illness, war) (Del Giudice, 2009), was used as an environmental cue for life expectancy and harshness. Socio-economic status (SES) was used as an environmental cue for resource scarcity.

The first study aimed to investigate whether priming individuals from various socio-economic backgrounds with a mortality cue affected their attitudes towards reproductive timing. One hundred and seventy university student participants (44 males, 126 females) with a mean age of 18.6 years ($SD = 1.63$) were randomly divided into either the experimental group, which received the mortality prime, or the control group, which received no prime. The mortality prime involved the participants reading a fake *New York Times* article titled "Dangerous Times Ahead: Life and Death in the 21st Century" which discussed increasing rates of violence and death in the United States. The control group read a neutral *New York Times* article. After reading the article, participants filled out questionnaires regarding their childhood SES, current SES, and attitudes towards reproduction (Griskevicius et al., 2011a). The results revealed a significant difference between the experimental group and the control group. The association was only significant for childhood SES and not current SES. For participants from low-SES childhoods, mortality cues led them to have more positive attitudes towards earlier reproduction, which is consistent with a

fast Life History Strategy. Further, Cohen's effect size value ($d = 0.257$) suggested a small effect size. In contrast, for individuals from high-SES childhoods, mortality cues led them to have more negative attitudes towards earlier reproduction, which is consistent with a slow Life History Strategy. However, Cohen's effect size value ($d = 0.262$) demonstrated a small effect size (Griskevicius et al., 2011a).

The second study investigated whether priming individuals from various SES backgrounds with mortality cues impacted the age in which they desire to have their first child. One hundred and eighty-two undergraduate students (85 males, 97 females) with a mean age of 19.4 ($SD = 1.75$) years participated in this study. The methodology was identical to the first study. The results revealed that for individuals from low-SES childhoods, the mortality cues produced a desire to have their first child sooner and get married sooner, which is consistent with a fast LHS. The Cohen's effect size value demonstrated this difference to be small to moderate ($d = .0326$). These results also revealed that for individuals from high-SES childhoods, mortality cues produced a desire to delay reproduction and marriage, which is consistent with a slow LHS. The effect size for this difference was found to be small to moderate ($d = 0.344$) (Griskevicius et al., 2011a). Both of these studies demonstrate how environmental cues led individuals to adopt certain Life History Strategies, which in response caused variations in reproductive timing.

Based on the studies previously mentioned, Griskevicius, Tybur, Delton, and Robertson (2011b) further theorized that Life History Strategies are associated with varying preference levels for risk and reward delay. Griskevicius et al. (2011b) conducted two studies that investigated how priming individuals from various SES backgrounds with mortality cues influenced their risky decision making and reward delay. The researchers hypothesized that individuals with a fast LHS will prefer riskier decisions and will tend to seize immediate rewards

because it is more adaptive for a shorter life expectancy. As well, they hypothesized that individuals with a slow LHS will prefer safer decisions and will tend to delay gratification because it is more adaptive for a longer life expectancy.

The first study investigated whether priming individuals from various SES backgrounds with mortality cues influenced their risk preference. Ninety-seven student participants (67 males, 30 females) were randomly assigned to either an experimental group, which received the prime, or a control group, which received no prime. Participants were primed with the same news article as described in the previously mentioned studies by Griskevicius et al. (2011a). Participants then filled out a questionnaire regarding their childhood SES and answered a series of questions that involved making a financial decision between a certain outcome and a riskier outcome (Griskevicius et al., 2011b). The results revealed that participants from low-SES childhoods responded to mortality cues by preferring riskier financial decisions with a higher payoff, which is consistent with a fast LHS. The Cohen's effect size value ($d = 0.539$) suggested this was a moderate significant difference. Participants from high-SES childhoods responded to mortality cues by preferring lower risk and lower benefit financial decisions, which is consistent with a slow LHS. However, the effect size for this significant difference was small ($d = 0.228$) (Griskevicius et al., 2011b).

The second study examined how priming individuals from various SES backgrounds with mortality cues influenced their tendency to delay gratification. Seventy-one student (36 males, 35 females) with a mean age of 20.8 years participated in this study. The methodology was almost identical to that of the first study; however, participants answered a series of questions that involved making a financial decision between a smaller immediate reward and a larger future reward (Griskevicius et al., 2011b). The findings demonstrated that mortality cues led

participants from low-SES childhoods to prefer smaller immediate rewards over larger future rewards with a small to moderate effect size ($d= 0.395$). As well, the prime led participants from high-SES childhoods to prefer larger future rewards over smaller immediate rewards with a moderate effect size ($d= 0.417$). These studies demonstrate how individuals with fast LHS have a shorter life expectancy and thus prefer riskier decisions that lead to larger rewards and prefer smaller immediate rewards over larger future rewards. Moreover, individuals with slow LHS have a longer life expectancy and thus prefer less risky decisions that lead to smaller rewards and prefer larger future rewards over smaller immediate rewards (Griskievicius et al., 2011).

These studies demonstrate how Life History Strategies are expressed through a core set of behaviours that are more suitable for certain environments. For example, a fast LHS is expressed through maximizing immediate rewards. In a harsh and unpredictable environment, it is not practical to delay rewards when obtaining those rewards in the future is uncertain. In order to increase the chance of reproductive success, it is more sensible to seize the immediate rewards. In contrast, a slow LHS is expressed through delaying immediate rewards. When the future is more predictable, it is more beneficial to delay an immediate smaller reward in order to maximize a larger future reward.

Mittal and Griskevicius (2014) theorized that an individual's sense of control influences the behavioural expression of their LHS. They conducted two experiments to investigate how economic uncertainty impacts an individual's sense of control. The researchers hypothesized that economic uncertainty will lead people from low-SES childhoods to feel less in control and thus become impulsive and seek immediate gratification, whereas people from high-SES childhoods will feel more in control and thus become less impulsive and delay gratification (Mittal & Griskevicius, 2014).

The first study investigated whether priming individuals from various socio-economic backgrounds with an economic uncertainty cue influences their sense of control. Ninety-five participants (36 males, 58 females) with a mean age of 32.6 years ($SD= 11.97$) were randomly assigned into either an experimental group, which received an economy uncertainty prime, or a control group, which received no prime. The economic uncertainty prime involved participants looking at images that represented unemployment, home foreclosure, and empty office buildings. The participants in the control group looked at neutral images of objects found in an office. After viewing the images, participants filled out questionnaires regarding their sense of control, childhood SES, and current SES (Mittal & Griskevicius, 2014). There were significant differences between the experimental group and the control group. The results revealed that economic uncertainty led people from low-SES childhoods to have a lower sense of control with a moderate effect size ($d= 0.471$) and led people from high-SES childhoods to have an increased sense of control with a small to moderate effect size ($d= 0.398$) (Mittal & Griskevicius, 2014).

The second study investigated whether priming individuals with an economic uncertainty cue has an effect on gratification delay and whether it can be mediated by an individual's sense of control. It was hypothesized that an increased sense of uncertainty should cause individuals with fast LHS to feel less in control over their lives and thus will lead them to maximize more immediate rewards and cause individuals with slow LHS to feel more in control and lead them to delay rewards (Mittal & Griskevicius, 2014). Eighty-four individuals (27 males, 57 females) with a mean age of 33.8 years ($SD= 11.76$) participated in this study. The methodology was almost identical to that of the first study, aside from an additional series of financial questions regarding smaller immediate rewards and larger future rewards was added. The findings revealed that exposure to economic uncertainty led people from low-SES childhoods to become impulsive

and prefer immediate smaller rewards because they felt a lower sense of control. The economic uncertainty cue led people from high-SES childhoods to become less impulsive and prefer delaying smaller immediate rewards for larger future rewards. These studies demonstrate that certain behaviours are indicative of an individual's Life History Strategies and these behaviours are more favourable depending on environmental pressures (Mittal & Griskevicius, 2014).

Bullying as an Adaptive Strategy

By applying evolutionary theory to the study of bullying, researchers have proposed that bullying has evolved as an adaptive strategy that, through the use of aggression, can lead to advantageous gains in three major evolutionary domains: reproduction, reputation, and resources (Volk et al., 2014). Researchers have begun to investigate whether bullying is associated with obtaining somatic, sexual, and social benefits (e.g. Volk, Dane, Marini, & Vaillancourt, 2015).

In the resources domain, bullying is more prominent in hunter-gather societies in which resources, such as food, are highly limited (Turnbull, 1972). As well, law students bully in order to gain academic and employment advantages (Flanagan, 2008). In the reproduction domain, relational bullying has been found to be used as an intrasexual competition strategy to obtain increased sexual opportunities with potential mates (Vaillancourt, 2013). For example, females sometimes derogate same-sex competitors by spreading rumours that question the victim's promiscuity in order to reduce their attractiveness to potential mates and to lower the victim's desire to compete for mates (Vaillancourt, 2013). This strategy may be effective as research has shown that bullying is associated with advanced dating activities. Bullies tend to start dating at a younger age, interact more with the opposite sex, and have more romantic partners (Vaillancourt, 2013; Connolly, Pelter, Craig, & Taradash, 2000; Volk, Dane, Marini, &

Vaillancourt, 2015). In the reputation domain, bullying has been associated with increased social status. For example, Vaillancourt, Hymel, and McDougall (2003) found that peer-nominated bullies tended to be perceived as highly popular.

Studies that have investigated the relationship between environmental pressures and their influence on the use of aggression have shown that specific environmental factors, such as harshness, predictability, and resource scarcity can increase the adaptive strategic use of aggression. Rivera-Maestre (2014) interviewed young African American and Latina women from inner-city low-income backgrounds using a qualitative narrative approach about their experiences with relational and physical aggression. A major theme that emerged from these interviews was that adolescent girls used relational and physical bullying as an adaptive strategy for self-protection and to obtain social status in their urban neighbourhoods. It was used as a means to demonstrate “strength and a willingness to fight” (Rivera-Maestre, 2014, p9). Rivera-Maestre (2014) concluded that, in their low socioeconomic status (SES) communities, physical and relational bullying can be an adaptive strategy for achieving social success by demonstrating a tough demeanour in order to avoid victimization and by damaging the reputation of rivals.

Williford and DePaolis (2012) conducted a study that explored the functions of aggression among low-income minority girls by applying the ecological systems theory in order to identify the protective and risk factors that predict the use of instrumental and reactive aggression. Two hundred and twelve participants filled out a series of questionnaires measuring SES, aggression, victimization, and self-concept. They found that social class was a risk factor that predicted the use of instrumental aggression. The researchers found that aggression was a means for survival because participants used it as an adaptive function to gain social and material

resources in their low-SES environment (Williford & DePaolis, 2012). The researchers concluded that, in certain contexts, aggression becomes adaptive and perceived as normal for survival.

Furthermore, Xie, Farmer, and Cairns (2003) investigated the various functions of three different types of aggression (relational, physical, and verbal) during peer conflicts among inner-city African American youth. During semi-structured interviews, 489 participants were asked to narrate an interpersonal conflict they have experienced. In this inner-city African American sample, it was found that female-female and male-male conflicts had higher levels of physical aggression and lower levels of relational aggression. This result conflicts with common research findings that, typically, girls tend to engage in more relational aggression and boys in more physical aggression. However, no gender difference was found in this sample (Xie, Farmer, & Cairns, 2003). The authors theorized that SES, an indicator of resource scarcity, could be an environmental pressure that influences the use of different forms of aggression. In these environments, resource scarcity can increase the adaptive function of physical aggression, thus girls may engage in more physical aggression than relational. This could potentially explain the lack of gender difference in this sample. These studies that have investigated aggression in low-income neighbourhoods have all found similar results: that SES is an environmental pressure that increases the use of aggression as an adaptive strategy by making it a potentially valuable strategy to gain social, somatic, and sexual advantages in everyday life. Similar to aggression, it is possible that environmental pressures also have the ability to influence the adaptiveness of bullying which is an instrumental form of aggression.

Personality

Another factor that was examined in this study will be personality. Previous research has shown that LHS are associated with certain personality traits. For example, individuals with slow LHS have been found to score higher on levels of Extraversion, Agreeableness, and Conscientiousness (Manson, 2015). In addition, it has been demonstrated that fast LHS tend to be associated with the “darker” personality traits (McDonald, Donnellan, & Navarrete, 2012). Specifically, the traits of the Dark Triad which include: Narcissism (grandiosity, sense of entitlement, need for admiration, and lack of empathy), Psychopathy (impulsivity, lack of remorse, manipulative, and antisociality), and Machiavellianism (self-interest, manipulative, exploitative, persuasiveness, and deceptive) (Book, Visser, & Volk, 2014; Jonason, Webster, Schmitt, Li, & Crysel, 2012).

Personality types of the Dark Triad become adaptive in environments with a shorter life expectancy because they make these individuals more likely to engage in antisocial behaviours, such as manipulation and exploitation, which are anticipated to help obtain evolutionarily relevant gains, such as career opportunities and more mating opportunities (Book et al., 2014). However, Book, Vissier, and Volk (2014) highlight how individuals with “darker” personality types can also engage in harmful behaviours by using long-term strategies of exploitation. This suggests that the Dark Triad personality types may also be associated with a fast LHS, in which individuals may adopt short-term exploitative opportunities in favour of employing a long-term cooperative strategy. Book et al., (2014) further proposed that a fast LHS may be more associated with a Dark Triad personality type in which Psychopathy is the dominant trait and that

a slow LHS may be more associated with a Dark Triad personality in which Narcissism is the dominant trait.

The HEXACO is a relatively newer measure of personality that is based on evolutionary theory. In addition to the five personality factors of the Big Five, the HEXACO measures a sixth factor termed Honesty-Humility. This factor represents an individual's willingness or disinclination to exploit others (Ashton, Lee, & Chongnak, 2000). Research has shown that the core of the Dark Triad is best represented by the Honesty-Humility factor (Book et al., 2014).

In regards to Life History Strategies, higher levels of Honesty-Humility may be adaptive in certain contexts, but not in others. Those with slow LHS have been found to have slightly higher levels of Honesty-Humility (Manson, 2015). In an environment that is less harsh, more predictable, and resource plenty, manipulative and exploitative behaviours may not be as adaptive. In these types of environments, it may be more beneficial for individuals with a slow LHS to engage in more long-term cooperative strategies (Book et al., 2014). As these types of antisocial behaviours may lead to more immediate rewards, it can be expected that, as the core of the Dark Triad is strongly associated with Honesty-Humility, individuals with a fast LHS will be more likely to have lower scores on the Honesty- Humility factor.

The HEXACO factors have also been related to bullying. Research has shown that this Honesty-Humility factor is better able to predict antisocial behaviour, such as instrumental aggression, than any of the Big Five Factors (Book, Volk, & Hosker, 2012). Bullying was significantly correlated with Agreeableness, Emotionality, and Conscientiousness. However, bullying was most strongly correlated with the Honesty-Humility factor, demonstrating that bullying is not just general aggression, but instrumental and targeted (Book et al., 2012). As LHS

determine individual differences in personality and that personality traits are associated with aspects of bullying, it is significant to investigate the relationship between LHS, personality, and bullying in the present study.

Attachment

Another important aspect in the present study that was examined is attachment. Evolutionary theory proposes that attachment has evolved as a product of natural selection to assure the parental investment in offspring in order to increase the chance of the offspring's survival (Salmon & Shackelford, 2011). A parent's Life History Strategy will determine how much they will invest in their offspring. Research has shown that, with the increase in environmental harshness, unpredictability, and resource scarcity, parental investment tends to decline as parents trade-off their investment in quality of offspring to quantity of offspring (Salmon & Shackelford, 2011). This trade-off is more adaptive for that type of environment because of a shorter life expectancy, in which investing in the quantity of offspring increases the chance of reproductive fitness (Salmon & Shackelford, 2011).

Alternatively, children use attachment security as a cue to determine the harshness, predictability, and resource availability of their environment (Del Giudice, 2009). In stressful environments, parental investment declines which prompts an insecure attachment style as an adaptive way to cope with the inconsistent parental care (Pauletti, Cooper, Aults, Hodges, & Perry, 2016). An insecure attachment style signals a harsh, unpredictable, and resource scarce environment (Del Giudice, 2009). This in turn indicates that a fast LHS will be more adaptive for that environment. On the other hand, in less stressful environments, parental investment increases, which tends to results in a secure attachment style. A secure attachment style signals a

less harsh, predictable, and resource plenty environment (Del Giudice, 2009). This in turn indicates that a slow LHS will be more adaptive for that environment.

Attachment is a relevant factor with regards to bullying because children's quality of attachment with parents has shown to be related to their involvement in bullying (Militsa, Stelios & Panayiotis, 2013). Research has demonstrated that children who are involved in bullying as either a bully or a victim tend to score higher on negative aspects of quality of attachment with their parents (such as trust) and are more likely to have insecure attachments with their parents (Militsa et al., 2013). Because parental investment varies depending on LHS and attachment plays an important role in bullying, it is pertinent to investigate how these factors could potentially be related.

Present Study

Life History Theory can be applied to the study of bullying because it has the potential to provide context for the different adaptive uses of bullying subtypes, as it has been previously applied to study the adaptive purpose of other risky adolescent behaviours (Ellis et al., 2012). For the present study, it is theorized that, as the environment shapes an individual's life history strategy, in turn this Life History Strategy may influence which bullying subtype is most likely to be used under specific environmental pressures.

As previously mentioned, individuals with slow LHS tend to prefer less risky decisions with smaller pay-offs and tend to delay smaller rewards for larger future rewards (Mittal & Griskevicius, 2014; Griskevicius et al., 2011). Researchers have suggested that relational bullying is less effective for obtaining immediate short-term goals because of the lack of

immediate force over the target. It is a more effective long-term strategy to employ social dominance for a long period of time without negative repercussions (Volk et al., 2012). Furthermore, relational bullying is less risky because it maximizes harm while minimizing consequences, such as detection or counter attacks (Vaillancourt, 2013). From an evolutionary perspective, reducing consequences is vital because, due to their greater parental investment, women are less likely to risk injury because the survival of their offspring was dependent on the mother's survival (Vaillancourt, 2013). In this way, because relational bullying is less risky and is a longer term strategy, it may be more likely to be used by individuals with slow LHS.

Conversely, individuals with fast LHS tend to prefer riskier decisions with quicker pay-offs and tend to maximize immediate smaller rewards over larger future rewards (Mittal & Griskevicius, 2014; Griskevicius et al., 2011). Thus, physical bullying may be a more effective means to achieve more immediate goals because it creates an instantaneous power over the victim. Physical bullying is riskier because it is direct and has a higher chance for detection and injury (Volk et al., 2012). Therefore, because physical bullying is riskier and is more of a short-term strategy, it may be more likely to be used by individuals with fast LHS.

Furthermore, Life History Theory can also be applied to study the relationship between LHS and personality traits, specifically Honesty-Humility. In a harsh, unpredictable, and resource scarce environment with a shorter life expectancy, antisocial behaviours, such as manipulation and exploitation, can be more favourable as they may be able to obtain evolutionarily relevant advantages quicker. Therefore, it is possible that individuals with a fast LHS are more likely to have lower levels of Honesty-Humility. In contrast, in a less harsh, more predictable, and resource plenty environment with a longer life expectancy, altruistic behaviours,

such as helping and being generous, can be more beneficial in order to build cooperative relationships to obtain evolutionary gains through reciprocity. In this way, individuals with a slow LHS may be more likely to have higher levels of Honesty-Humility.

Previous research has utilized a Life History approach to investigate the relationship between attachment and environmental cues. As previously mentioned, children use the quality of parental investment and the formation of their attachment style as a cue to assess the harshness, predictability, and resource availability of the environment. Research has shown that parental investment tends to decline in stressful environments, which leads to the development of an insecure attachment style. Therefore, individuals with an insecure attachment style are more likely to adopt a fast LHS. Contrastingly, the quality of parental care tends to increase in less stressful environments, which guides the development of a secure attachment. Thus, individuals with a secure attachment style are more likely to adopt a slow LHS. Based on the Life History research regarding bullying subtypes, personality, and attachment, the following general research questions are posed:

- Do individuals with fast and slow LHS engage in different bullying subtypes?
- Do individuals with fast and slow LHS differ on their levels of Honesty-Humility?
- Do individuals with fast and slow LHS differ on their type of attachment?

To address these research questions, the present study investigated whether direct bullying subtypes will be used in more resource scarce environments as a short-term strategy by individuals with a fast LHS and whether indirect bullying subtypes will be used in more resource plenty environments by individuals with a slow LHS. The methodology used in this study was similar to the methodology described in Griskevicius et al. (2011a), particularly modified to

investigate the relationship between environmental pressures, Life History Strategies, and bullying subtypes. The following hypotheses were pursued:

1. Mortality prime will lead individuals with fast Life History Strategies to engage in more bullying, specifically in more direct forms (physical and verbal bullying) and mortality prime will lead individuals with slow Life History Strategies to engage in more indirect forms of bullying (relational and cyber bullying).
2. Individuals with a slow LHS will have higher levels of Honesty- Humility and Fast LHS will have lower levels of Honesty-Humility.
3. Individuals with a fast LHS will have more insecure attachment styles (high avoidance, high anxiety) and slow LHS will have more secure attachment styles (low avoidance, low anxiety).

Chapter 3: Methodology

Participants

Two-hundred and sixty-one participants were recruited from extracurricular activities (sports teams, youth groups, and dance/karate teams) in the Niagara Region of Southern Ontario. The sample consisted of 125 males and 135 females between the ages of 12 and 18 ($M = 14.67$, $SD = 1.84$). Self-reported ethnicity indicated that 74.4% were Caucasian/European, 1.9% were African American, 0.8% were Hispanic/Latino, 1.1% were Aboriginal/First Nations, 6.5% were Asian/Pacific Islander, 2.7% were Middle Eastern, 2.3% were other, and 10.3% did not report their ethnicity. As well, 30.5% of participants were categorized as high SES, 39.7% as medium SES, and 29.8% as low SES.

Measures

Demographics Questionnaire: Participants were asked to answer a basic demographics questionnaire regarding their age, sex, and ethnicity (See Appendix A).

The Mini K (Figueredo, Wolf, Olderbak, Gladden, Fernandes, Wenner, & Rushton, 2014) is a 20 item self-report short form of the 199-item *Arizona Life History Battery*, which measures a high order Life History factor, termed the K-Factor, that underlies a variety of behavioural and cognitive indicators of Life History Strategy. It has two to three items assessing each of the seven constructs in the ALHB. These seven constructs include: (1) Insight, Planning, and Control (2) Mother/Father Relationship Quality (3) Family/Friends Contact (4) Family/Friends Support (5) Experiences in Close Relationships (6) General Altruism (7) Religiosity (Olderbak, Gladden, Wolf, & Figueredo, 2014). The scores either indicate either a

Slow (High K-Factor) LH strategy or Fast (Low K-Factor) LH Strategy. This measure reports a .85 internal consistency using a Cronbach's Alpha in the current study. In the present study, the Mini K will be used to assess participants LHS (See Appendix B). Some items were removed in order to reduce duplication. Items #7 and #8 were replaced by the average score from the 20 items used to assess perceived parental warmth in Rohmer 's (2004) Parental Acceptance-Rejection Questionnaire (PARQ). Item #10 is replaced by item #9 from the *Dating and Sexual Activity Questionnaire* (Volk, Dane, Marini, & Vaillancourt, 2015). Item #11 is replaced with item #20 from the *Dating and Sexual Activity Questionnaire* (Volk, et al., 2015). Item #12 is replaced by item #21 from the *Dating and Sexual Activity Questionnaire* (Volk, et al., 2015). Lastly, item #9 is completely eliminated as it will unlikely apply to the age range of the sample. All items were standardized and combined to create an overall LHS variable. A median split was used to divide participants into slow LHS (above the median) or fast LHS (below the median).

Bullying Questionnaire (Volk & Lagzdins, 2009) is a 12-item behavioural checklist that assesses the frequency of bullying and victimization. There are six questions asking how often in the last year the participant has engaged in a variety of bullying behaviours. As well, there are six questions asking how often in the last year the participant has been of a victim of a variety of bullying behaviours. Participants are asked to indicate the level of frequency on a 5 point Likert scale ranging from 1= Not at All to 5= Many Times a Week. The six bullying items have reported a Cronbach's Alpha ranging from .77 to .83 and the six victimization items have reported a Cronbach's Alpha ranging from .72 to .81 (Marini et al, 2006). For the present study, physical bullying subscale reported a Cronbach's Alpha of .83, verbal bullying subscale reported a Cronbach's Alpha of .80, relational bullying subscale reported a Cronbach's Alpha of .82, and

lastly cyber bullying subscale reported a Cronbach's Alpha of .88. In the present study, this survey will be used to measure the frequency of bullying (See Appendix C).

Dating and Sexual Activity Questionnaire (Volk, Dane, Marini, & Vaillancourt, 2015) is a seven item self-report questionnaire in which dating and sexual behaviour is assessed with a few items adapted from the Sociosexuality Orientation Inventory (Simpson, & Gangestad, 1991). Questions include at what age did participants begin to date and how many partners have they dated, and at what age did participants have their first sexual experience and how many partners have they had sexual experiences with. This questionnaire was originally created in a study that examined the relationship between dating and sexual behaviour and bullying (See Appendix D).

In the current study, this questionnaire will be used as an indicator of Life History Strategy. Due to a shorter life expectancy, individuals who adopt a fast LHS tend to reproduce earlier and more frequently (Ellis, et al., 2009; Belsky et al., 2012).; therefore, participants who begin dating and having sexual experiences at a younger age and have more dating and sexual partners will be used as an indication of a fast LHS . In contrast, due to a longer life expectancy, individuals who adopt a slow LHS tend to delay reproduction and have fewer partners; therefore, participants who begin dating and having sexual experiences at an older age and have less dating and sexual partners will be used as an indication of a slow LHS.

Socioeconomic Status (SES): subjective childhood socioeconomic status will be assessed using three questions in which participants must select the response that best represents their family situation growing up on 5 point Likert scale. The statements are as follows: 1) Compared to the average Canadian, do you think your family is... 2) What is the highest level of education that your mother has completed? 3) What is the highest level of education that your

father has completed? (See Appendix E). In the current study, subjective childhood SES will be used as an indicator of Life History Strategy, as previous research has shown that individuals who report a low childhood SES tend to adopt a fast LHS and individuals who report a high childhood SES tend to adopt a slow LHS (Griskevicius et al., 2011). The three items were combined into one SES variable and percentiles were used to categorize participants into low, medium, or high SES.

The HEXACO-60 (Ashton & Lee, 2009) is a 60 item self-report short form of the HEXACO Personality Inventory-Revised, which has 100 items. It measures six dimensions of personality: Honesty-Humility (H), Emotionality (E), Extraversion (X), Agreeableness (A), Conscientiousness (C), Openness to Experience (O). There are ten statements for each dimension. Participants are asked to indicate their level of agreement with each statement using a 5 point Likert Scale ranging from 1= strongly disagree to 5= strongly agree. In the present study, this measure reported a Cronbach's Alpha of .80. In the current study, personality will be measured as a side factor to investigate whether variations in LHS predict variations in the HEXACO personality dimensions. The Openness subscale was removed as it was not of interest in this study (See Appendix F).

Early Adolescent Temperament Questionnaire-Revised (Capaldi & Rothbart, 1992) is a 59-item self-report questionnaire that assesses temperament in early adolescence. It has four superscales which include Effortful Control (Attention, Inhibitory Control, Activation Control), Negative Affect (Frustration and Depressive Mood), Surgency (High Intensity Pleasure, Fear, Shyness), and Affiliativeness (Affiliation, Perceptual Sensitivity, Pleasure Sensitivity). Participants are asked to indicate how true each statement is for them on a 5 point Likert Scale

ranging from 1= Almost always untrue to 5= Almost always true. The coefficient alpha for this measure in the present study was .85. In the current study, temperament will be examined as a side factor in order to aid in the investigation of the relationship between personality, bullying, and LHS (See Appendix G).

The Experiences in Close Relationship-Relationship Structures Questionnaire (ECR-RS) (Fraley, Heffernan, Vicary, & Brumbaugh, 2011) is a 36-item self-report questionnaire that assesses an individual's attachment to their mother, to their father, to their romantic partner, and to their best friend. There are 9 items to assess each attachment domain. Participants are asked to indicate their level of agreement for each statement on a 7 point Likert Scale ranging from 1= Strongly Disagree to 7= Strongly Agree. For this questionnaire, the test-retest reliability in the present study was .93. In the present study, attachment will be measured as a side factor in order to investigate the relationship between attachment, bullying, and LHS (See Appendix H).

Mortality Prime: The mortality prime is a fake *New York Times* news article entitled “*Dangerous Times Ahead: Life and Death in the 21st Century*”, in which it discusses the increasing rates of violence and death in the United States, as described in Griskevicious et al. (2011a). For the current study, the mortality prime was adapted from the original version used in Griskevicious et al. (2011a). It was modified to be 707 words (as to be equal to the neutral prime) and the location was changed from the United States to Southern Ontario. The news article was also updated with more recent examples of terrorist acts, and additional factors were included, such as bullying and substance addiction, to further increase the sense of increasing mortality (See Appendix I).

Neutral Prime: The neutral prime is a fake *New York Times* article entitled “*Where are my keys?!?*”, in which it describes a story about a student who lost their keys, searches for them, and finally succeeds at finding them, as described in Griskevicious et al. (2011a). For the current study, the neutral prime was modified to be 707 words (as to be equal to the mortality prime). A few sentences were added to describe more places in which the student searches for their keys (See Appendix J).

Six Hypothetical Bullying Scenarios: Participants will be asked to respond to six hypothetical bullying scenarios created by the researcher. These hypothetical scenarios describe a situation in which the participant must obtain a certain goal. Researchers have proposed that bullying is an instrumental tool in which aggression is used to obtain three major evolutionary goals: resources, reputation, and reproduction (Volk et al., 2014). Therefore, two scenarios were created for each major type of goal. Two situations describe obtaining resources, two situations describe obtaining higher social status, and two situations describe obtaining more mating opportunities. Within each goal, the two scenarios vary in severity. One scenario is more severe and one scenario is less severe. Each scenario has four responses with each response representing a subtype of bullying (Verbal, Physical, Relational, Cyber). Each response varies in level of risk. Participants are asked to rate each answer on how likely they are to respond in that way on a 5 point Likert Scale ranging from 1= Extremely Unlikely to 5= Extremely Likely (See Appendix K). These hypothetical bullying scenarios were modeled after the outcome expectancy scenarios for aggression and victimization created by Kennedy and Perry (1993) as well as the violent outcome expectancy vignettes by Crick and Ladd (1990). In the present study, the hypothetical physical bullying subscale reported a Cronbach’s Alpha, the hypothetical verbal bullying subscale reported a Cronbach’s Alpha of .95, the hypothetical relational bullying subscale

reported a Cronbach's Alpha of .95, and the hypothetical cyber bullying subscale reported a Cronbach's Alpha of .90.

Procedure

After receiving ethical clearance from Brock University Research Ethics Board (See Appendix L), organizations were contacted via phone or email and their members were invited to participate in the study (See Appendix M). Once permission was obtained from the organization (See Appendix O), the researcher and student collaborators visited the organization to explain the study to the members (See Appendix N). After all questions were answered, participants who were interested in participating received an envelope containing parental consent form (See Appendix Q), assent form (See Appendix P), and a link to complete the online study using Qualtrix. Participants first completed multiple questionnaires that measure the following constructs: subjective childhood SES, Life History Strategy, Personality, Temperament, Attachment, Dating and Sexual Activity, and Bullying History. Participants were then randomly assigned to either an experimental group or a control group. The experimental group received the mortality prime, the adapted news article described in Griskevicious et al. (2011a). The control group received the modified neutral prime, as described in Griskevicious et al. (2011a). After reading the prime news article or the fake news article, participants responded to six hypothetical bullying scenarios created by the researcher. Completing the questionnaires took between an hour and an hour and a half. Upon completion of the questionnaires, participants read a debriefing letter (See Appendix R) that restated the purpose of the study and provided some resources they can contact if they wish to speak to someone about their bullying experiences (i.e. kids help phone). The researcher and student collaborators returned to the organizations one

week later after the initial visit to collect signed consent and assent forms from the participants who completed the online questionnaires (shown as 100% on Qualtrix). Participants who completed the online questionnaires and returned their signed consent and assent forms received 15\$ cash for their participation.

Chapter 4: Results

Preparation for Data Analysis

Once the questionnaires were completed, the data was imported from Qualtrix and inputted into IBM SPSS Statistics 22 and statistical analyses were completed. Variables were coded as instructed and composite variables were computed.

A missing value analysis was conducted on all variables and revealed missing data ranging from 0% to 7.4%. Only two variables were above the suggested 5% cut-off point for missing data (Tabachnick & Fidell, 2007). The first variable was the Sex and Dating questionnaire with 7.4% missing. This can be attributed to the nature of the items as some participants may feel uncomfortable responding to questions regarding their sexual activity, especially for the age range of 12 to 18 years. The second variable was the Mini K questionnaire with 6.0% missing. The Mini K was one of the last questionnaires participants completed, therefore participants response burden likely contributed to the increased missing data towards the end of the study. For the remaining variables, there appeared to be no pattern to the missing data. As I wanted to maintain as much statistical power as possible, mean substitution was used to replace the missing data. The new dataset with missing data replaced was compared to the original data set and no significant differences were found.

Descriptive statistics and box plots were then examined for skewness, kurtosis, and possible outliers. All variables fell within the normal range of $+3/-3$, except for Cyber Bullying, which had a kurtosis of 4.35, and Hypothetical Cyber Bullying, which had a kurtosis of 4.28. With exception to the Cyber Bullying and Hypothetical Cyber Bullying variables, variables with

two to three outliers were winsorized to the next closest value as it was essential to maintain the sample size ($N=261$) (Tabachnick & Fidell, 2007). This option is appealing as it allows extreme values to remain in the data set while also reducing its impact as an outlier.

Lastly, a Shapiro-Wilks test of normality was conducted. All variables were normal at $p>0.5$, except for the following variables: Physical Bullying, Verbal Bullying, Relational Bullying, Cyber Bullying, Hypothetical Physical Bullying, Hypothetical Verbal Bullying, Hypothetical Relational Bullying, and Hypothetical Cyber Bullying. This is a common issue when dealing with bullying data because it is considered as “count data”, in which the number of incidents that occurred within a specific period of time is assessed (Huang & Cornell, 2012). Within bullying data, the average person will report no incidents or one to two incidents of bullying, while a few will report multiple incidents of bullying (Huang & Cornell, 2012). This results in a non-normal positively skewed distribution. A common solution to this problem is transforming the data (Huang & Cornell, 2012). As all of these bullying variables were either moderately (skewness greater than 3) or slightly positively skewed (skewness approaching 3), Log transformation, Square root transformation, and Reciprocal transformation were attempted; however, this only resulted in skewing the data even more. Another common solution is dichotomizing the dependent variables; however, changing a continuous variable into a categorical variable risks losing meaningful information and also reduces statistical power. As it is common to have skewed bullying data (Huang & Cornell, 2012), the following results are interpreted with caution because non-normal data has the potential to increase Type I Error (rejecting the null hypothesis when it is true). In summary, after the missing data was replaced and the data was examined for skewness, kurtosis, outliers, and normality it was ready to be analysed.

Data Analysis

For the current study, composite variables were created for personality, temperament, attachment, Life History Strategies, Socioeconomic status, bullying subtypes, and hypothetical bullying scenario subtypes. Table 1 displays the means and standard deviations for each of these composite variables. Table 2 shows all of the correlations between the composite variables.

Table 1. Means and Standard Deviations of all Composite Variables

Variable	<i>M</i>	<i>SD</i>
Honesty-Humility (Personality)	3.37	.60
Emotionality (Personality)	3.24	.59
Extraversion (Personality)	3.32	.66
Agreeableness (Personality)	3.23	.53
Conscientiousness (Personality)	3.52	.58
Effortful Control (Temperament)	3.45	.58
Surgency (Temperament)	3.05	.45
Negative Affect (Temperament)	3.09	.63
Affiliativeness (Temperament)	3.61	.68
Avoidance (Attachment)	2.53	1.03
Anxiety (Attachment)	2.24	1.41
Mini K (Life History Strategy)*a	4.98	.92
SES	3.70	.90
Physical Bullying	1.33	.41
Verbal Bullying	1.35	.39
Relational Bullying	1.39	.45
Cyber Bullying	1.23	.41
Hypothetical Physical	7.84	3.65
Hypothetical Verbal	7.59	3.52
Hypothetical Relational	7.46	3.44
Hypothetical Cyber	7.55	3.43
Casual Sex*b	3.08	2.09
Long-term Relationship*c	5.22	2.04
Sexual Partners	0.98	3.46

Note: All variables (n=261). On all variables, higher scores represented higher levels of personality traits, temperament traits, avoidance and anxious attachment styles, socioeconomic status, and frequencies of bullying. *a Higher scores on the Mini K indicate a slower Life History Strategy. *b Higher scores on Casual sex indicate a greater level of comfort with engaging in casual sex. *c Higher scores on Long-term Relationship indicate a greater desire to be in a long-term relationship before engaging in sexual activity.

Table 2. Correlations of All Composite Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1.Honesty-Humility	-	.220**	.071	.299**	.372**	.367**	-.113	-.169*	.132*	-.145*	-.106	.130*	-0.93	-.223**	-.331**	-.272**	-.473**	-.293**	-.277**	-.274**	-.236**	-.314**	.247**	-.123
2.Emotionality		-	-.063	-.076	.209**	.0.66	.355**	.456**	.349**	-.051	.146*	.191*	-.021	-.050	-.035	.157*	.030	-.132*	-.142*	-.105	-.096	-.202**	.160*	.088
3.Extraversion			-	.368**	.334**	.343**	-.129*	-.308**	.219**	-.444**	-.399**	.335**	.195**	-.098	-.063	-.055	-.081	-.121	-.123	-.117	-.121	-.034	.176	-.037
4.Agreeableness				-	.284**	.367**	-.063	-.305**	.242**	-.264**	-.226**	.286**	.042	-.235**	-.183**	-.237**	-.149**	-.178*	-.162*	-.127	-.153*	-.127	.146*	-.113
5.Conscientiousness					-	.727**	.052	-.063	.325**	-.323**	-.267**	.365**	.076	-.260**	-.205**	-.128*	-.192**	-.320**	-.283**	-.276**	-.294**	-.399**	.113	-.064
6.Effortful Control						-	-.072	-.260**	.223**	-.404**	-.295*	.416**	.107	-.198**	-.228**	-.167*	-.222**	-.237**	-.210**	-.264*	-.223**	-.201**	.170*	-.114
7.Surgency							-	.582**	.471**	0.40	.091	.116	.003	.032	.014	.145*	.269*	-.043	-.038	-.036	-.044	-.080	.099	-.040
8.Negative Affect								-	.500**	.135*	.172**	-.023	-.052	.071	.193*	.114	.162*	-.038	-.044	-.038	-.035	-.010	.111	.056
9.Affiliativeness									-	-.287**	-.205**	.404**	.062	-.118	-.025	-.108	-.047	-.342**	-.297**	-.297**	-.305**	-.061	.102	-.002
10.Avoidance										-	.544**	-.462**	-.166**	.122	.057	.042	.038	.277**	.242**	.248**	.249**	.084	-.193**	.107
11.Anxiety											-	-.283*	-.086	.272*	.108*	.234*	.193*	.361**	.315**	.331**	.359**	.041	-.235**	.215**
12.Mini K												-	.245**	-.068	-.114	-.057	-.106	-.140*	-.116	-.109	-.122	-.055	.197*	.023
13.SES													-	.116	-.006	.045	.098	.120	.158*	.145*	.126*	.015	-.025	.021
14.Physical Bullying														-	.395**	.473**	.450**	.238**	.256**	.227*	.234**	.194**	-.175**	.397**
15.Verbal Bullying															-	.533**	.447**	.165*	.200**	.163*	.122	.199**	-.149**	.051
16.Relational Bullying																-	.781**	.363**	.404**	.401**	.378**	.206**	-.153*	.463**
17.Cyber Bullying																	-	.375**	.441**	.428**	.401**	.268**	-.148*	.482**
18.Hypothetical Physical																		-	.960**	.940**	.921**	.196**	-.153*	.384**
19.Hypothetical Verbal																			-	.958**	.931**	.195**	-.158*	.393**
20.Hypothetical Relational																				-	.950**	.205**	-.171*	.412**
21.Hypothetical Cyber																					-	.179**	-.143*	.386**
22.Casual Sex																						-		.297**
23.Longterm Relationship																							-	-.320**
24.Sexual Partners																								-

Note. * $p < .05$. ** $p < .01$

Correlations

There were multiple significant correlations to be considered. Honesty-Humility was negatively correlated with physical bullying ($r = -.223, p < .01$), verbal bullying ($r = -.331, p < .01$), relational bullying ($r = -.272, p < .01$), and cyber bullying ($r = -.473, p < .01$). Honesty-Humility was also negatively correlated with hypothetical physical bullying ($r = -.293, p < .01$), hypothetical verbal bullying ($r = -.277, p < .01$), hypothetical relational bullying ($r = -.274, p < .01$), and hypothetical cyber bullying ($r = -.236, p < .01$). Honesty-Humility was positively correlated with the Mini K ($r = .130, p < .05$). Honesty-Humility was negatively correlated with being comfortable engaging in casual sex ($r = -.314, p < .01$) and positively correlated with desiring a long-term relationship before engaging in sexual activity ($r = .247, p < .05$).

Conscientiousness was negatively correlated with physical bullying ($r = -.260, p < .01$), verbal bullying ($r = -.205, p < .01$), relational bullying ($r = -.128, p < .05$), and cyber bullying ($r = -.192, p < .01$). Conscientiousness was negatively correlated with hypothetical physical bullying ($r = -.320, p < .05$), hypothetical verbal bullying ($r = -.283, p < .01$), hypothetical relational bullying ($r = -.276, p < .05$), and hypothetical cyber bullying ($r = -.294, p < .01$). Conscientiousness was positively correlated with the Mini K ($r = .365, p < .01$). Lastly, Conscientiousness was negatively correlated with being comfortable engaging in casual sex ($r = -.399, p < .01$).

Avoidant attachment style was positively correlated with hypothetical physical bullying ($r = .277, p < .01$), hypothetical verbal bullying ($r = .242, p < .01$), hypothetical relational bullying ($r = .248, p < .01$), and hypothetical cyber bullying ($r = .248, p < .01$). Avoidant attachment style was positively correlated with physical bullying ($r = .272, p < .05$), verbal bullying ($r = .108, p < .05$), relational bullying ($r = .234, p < .05$), cyber bullying ($r = .193, p < .05$). Avoidant

attachment style was negatively correlated with the Mini K ($r = -.283, p < .01$) and SES ($r = -.166, p < .01$).

Anxious attachment style was positively correlated with physical bullying ($r = .308, p < .05$), verbal bullying ($r = .243, p < .05$), and relational bullying ($r = .242, p < .05$). In addition, Anxious attachment style was positively correlated with hypothetical physical bullying ($r = .361, p < .01$), hypothetical verbal bullying ($r = .315, p < .01$), hypothetical relational bullying ($r = .331, p < .01$), and hypothetical cyber bullying ($r = .359, p < .01$). Anxious attachment style was negatively associated with the Mini K ($r = -.275, p < .01$). Lastly, Anxious attachment style was negatively associated with the desire to be in a long-term relationship before engaging in sexual activity ($r = -.235, p < .05$) and positively correlated with the number of sexual partners ($r = .215, p < .01$).

The Mini K was positively correlated with SES ($r = .245, p < .01$) and the desire to be in a long-term relationship before engaging in sexual activity ($r = .197, p < .05$). The Mini K was not significantly correlated with bullying and was only weakly negatively correlated with hypothetical physical bullying ($r = -.140, p < .05$).

Being comfortable engaging in casual sex was positively correlated with physical bullying ($r = .194, p < .01$), verbal bullying ($r = .199, p < .01$), relational bullying ($r = .206, p < .01$), and cyber bullying ($r = .268, p < .01$). As well, being comfortable engaging in casual sex was positively correlated with hypothetical physical bullying ($r = .196, p < .01$), hypothetical verbal bullying ($r = .195, p < .01$), hypothetical relational bullying ($r = .205, p < .01$), and hypothetical cyber bullying ($r = .179, p < .01$). Moreover, being comfortable engaging in casual sex was negatively correlated with the desire to be in a long-term relationship before engaging in sexual

activity ($r = -.320, p < .01$) and positively correlated with the number of sex partners ($r = .297, p < .01$).

The desire to be in a long-term relationship before engaging in sexual activity was negatively correlated with physical bullying ($r = -.175, p < .05$) verbal bullying ($r = -.149, p < .01$), relational bullying ($r = -.153, p < .01$), and cyber bullying ($r = -.148, p < .05$). In addition, the desire to be in a long-term relationship was negatively correlated with hypothetical physical bullying ($r = -.153, p < .05$), hypothetical verbal bullying ($r = -.158, p < .05$), hypothetical relational bullying ($r = -.171, p < .05$), and hypothetical cyber bullying ($r = -.143, p < .05$). The desire to be in a long-term relationship before engaging in sexual activity was also negatively correlated with the number of sex partners ($r = -.252, p < .01$).

The number of sex partners was positively correlated with physical bullying ($r = .397, p < .01$), relational bullying ($r = .463, p < .01$), and cyber bullying ($r = .482, p < .01$). As well, the number of sex partners was positively correlated with hypothetical physical bullying ($r = .384, p < .01$), hypothetical verbal bullying ($r = .393, p < .01$), hypothetical relational bullying ($r = .412, p < .01$), and hypothetical cyber bullying ($r = .386, p < .01$).

Research Question #1: Do individuals with fast and slow LHS engage in different bullying subtypes?

The present study used a randomized experimental design with one between subjects prime condition. The experimental group received a mortality prime and the control group received a neutral prime. The first step of the analysis was to check whether the condition groups were equal. Independent samples t-tests were conducted to test whether the groups differed on

age, gender, and SES. There was no significant differences found between the groups on age ($t(77) = -1.211, p = .229$), gender ($t(79) = .989, p = .326$), and SES ($t(79) = -.296, p = .768$).

The second step was to test whether the mortality prime was effective in eliciting a sense of unpredictability by cueing a lower life expectancy, which in turn would prompt behaviours consistent with their LHS to emerge. To test this, a multivariate ANOVA analysis (MANOVA) was conducted with the condition variable (control, experimental) and LHS (fast, slow), and SES (low, medium, high) as the independent variables and the hypothetical bullying subtypes (physical, verbal, relational, cyber) as the dependent variables. There was no significant differences between the control and the experimental groups for hypothetical physical bullying ($F(1, 261) = 1.23, p = .267$), for hypothetical verbal bullying ($F(1, 261) = 1.85, p = .175$), for hypothetical relational bullying ($F(1, 261) = 1.78, p = .183$), and for hypothetical cyber bullying ($F(1, 261) = .995, p = .320$). There was no significant interaction between the condition and SES for hypothetical physical bullying ($F(1, 261) = .834, p = .436$), for hypothetical verbal bullying ($F(1, 261) = 1.16, p = .312$), hypothetical relational bullying ($F(1, 261) = 1.13, p = .323$), and for hypothetical cyber bullying ($F(1, 261) = .604, p = .548$). There was no significant interaction between the condition and LHS for hypothetical physical bullying ($F(1, 261) = 1.08, p = .299$), for hypothetical verbal bullying ($F(1, 261) = 1.01, p = .294$), for hypothetical relational bullying ($F(1, 261) = .626, p = .536$), and for hypothetical cyber bullying ($F(1, 261) = .552, p = .552$). There was no significant interaction between the condition, LHS, and SES for the hypothetical physical bullying ($F(2, 261) = .450, p = .638$), for the hypothetical verbal bullying ($F(2, 261) = .559, p = .572$), for the hypothetical relational bullying ($F(2, 261) = .626, p = .536$), and for the hypothetical cyber bullying ($F(2, 261) = .596, p = .552$). These results indicate that there were no significant differences between the control and experimental group regarding their

hypothetical bullying responses. Therefore, the prime condition was not included in any further analyses.

With the prime being ineffective, the control and experimental groups were combined. Next, a multivariate ANOVA analysis (MANOVA) was conducted with LHS (fast, slow) and SES (high, medium, low) as the independent variables and the hypothetical bullying subtypes (physical, verbal, relational, cyber) as the dependent variables. There was no significant interaction between SES and LHS for hypothetical physical bullying ($F(2, 261) = 1.14, p = .319$), for hypothetical verbal bullying ($F(2, 261) = 1.23, p = .292$), for hypothetical relational bullying ($F(2, 261) = .901, p = .408$), and for hypothetical cyber bullying ($F(2, 261) = .159, p = .205$). These results indicate that there are no significant differences between fast and slow LHS from low, medium, or high SES.

All four of the hypothetical bullying subtypes had no significant interaction between LHS and SES; therefore, SES was removed from the next step of the analysis. A one-way ANOVA analysis was completed with LHS (slow, fast) as the independent variable and the four hypothetical bullying subtypes (physical, verbal, relational, cyber) as the dependent variables. There was no significant difference between slow and fast LHS for hypothetical physical bullying ($F(1, 261) = 3.51, p = .062$), for hypothetical verbal bullying ($F(1, 261) = 1.80, p = .181$), for hypothetical relational bullying ($F(1, 261) = .194, p = .164$), and for hypothetical cyber bullying ($F(1, 261) = .381, p = .051$). These results indicate that there were no significant differences between fast and slow LHS on participants' hypothetical bullying responses.

The previous results demonstrated that there were no significant differences between LHS, SES, and the hypothetical bullying subtypes. Therefore, the same analyses were repeated;

however, instead of using the hypothetical bullying scenarios, the four bullying subtype subscales from the Multidimensional, Integrated, Contextualized Measure of Bullying, Aggression, and Victimization (Volk, Dane, & Marini, in press) were used as the dependent variables because these subscales assessed current bullying frequencies as opposed to responses to hypothetical bullying scenarios.

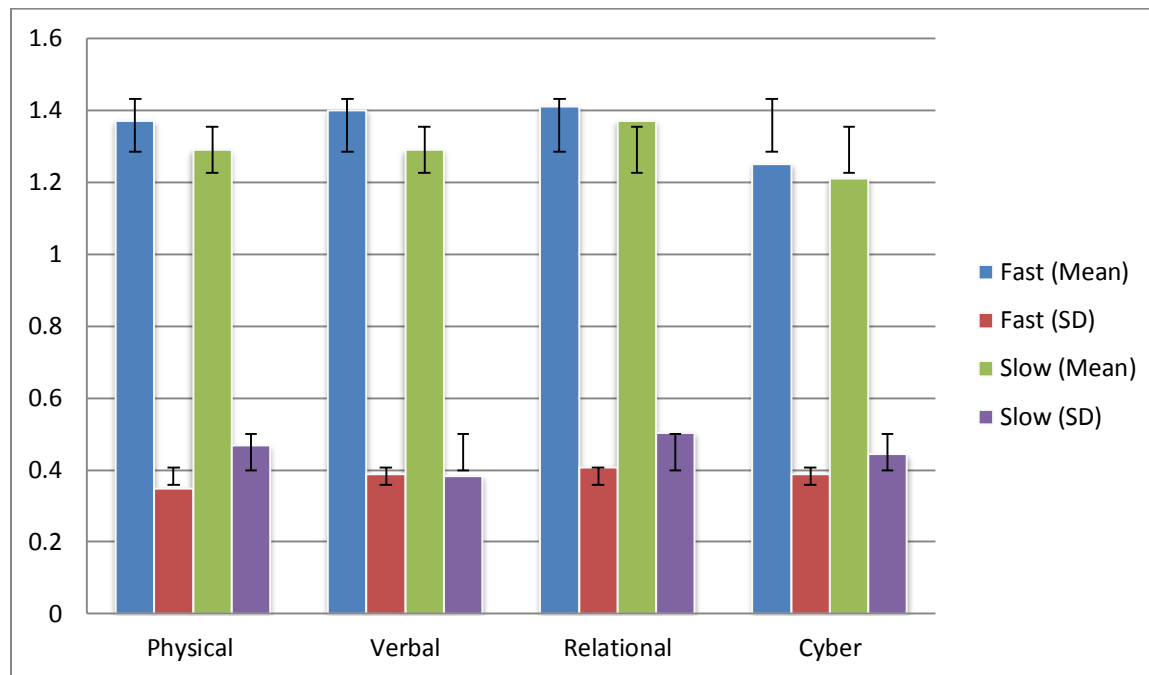
A multivariate ANOVA analysis (MANOVA) was completed with LHS (slow, fast) and SES (low, medium, high) as the independent variables and the four bullying subtypes (physical, verbal, relational, cyber) from the Multidimensional, Integrated, Contextualized Measure of Bullying, Aggression, and Victimization (Volk, Dane, & Marini, in press) as the dependent variables. There was no significant interaction between LHS and SES for physical bullying ($F(2, 261) = .099, p = .906$), for verbal bullying ($F(2, 261) = .135, p = .873$), for relational bullying ($F(2, 261) = .681, p = .507$), and for cyber bullying ($F(2, 261) = .211, p = .810$). Participants with a slow or fast LHS were not more likely to engage in any form of bullying based on whether they were from a low, medium, or high SES background.

Due to LHS having no significant interactions with SES for all four bullying subtypes, it was removed from further analyses. A one-way ANOVA was conducted to test whether there were significant differences between fast and slow life history strategies and the frequencies of the four bullying subtypes. The difference between slow and fast LHS on physical bullying approached significance ($F(1, 261) = 3.48, p = .063$). Participants with a fast LHS ($M = 1.37, SD = .31$) engaged in more physical bullying than participants with a slow LHS ($M = 1.29, SD = .46$). Furthermore, Cohen's effect size value ($d = .02$) suggests a small practical significance. For verbal bullying, there was a significant difference between fast and slow LHS ($F(1, 261) = 5.27,$

$p < .05$). The Cohen's effect size value ($d = .26$) suggested a small significant difference.

Participants with a fast LHS reported engaging in more verbal bullying ($M = 1.39$, $SD = .38$) than participants with a slow LHS ($M = 1.29$, $SD = .38$). There was no significant difference between slow and fast LHS for relational bullying ($F(1, 261) = .652$, $p = .420$) and for cyber bullying ($F(1, 261) = .929$, $p = .336$).

Figure 1. Bullying Subtypes Means Between Slow and Fast LHS.



In summary, the prime manipulation was not effective in eliciting a sense of unpredictability as there were no significant differences between the control and experimental groups regarding their responses to hypothetical bullying scenarios. As well, SES did not have a significant interaction with LHS in any of the analyses. However, there was a significant difference found between slow and fast LHS regarding their current verbal bullying frequencies and physical bullying frequencies approaching significance.

Research Question #2: Do individuals with fast and slow LHS differ on their levels of Honesty-Humility?

A factorial two-way ANOVA analysis was completed with LHS (slow, fast) and SES (low, medium, high) as the independent variables and the HEXACO subscale titled Honesty-Humility as the dependent variable. There was no significant interaction between LHS and SES regarding level of Honesty-Humility ($F(2, 261) = 1.42, p = .243$). Due to LHS having no significant interactions with SES, it was removed from further analyses.

A one-way ANOVA was conducted to test whether there was a significant difference between fast and slow life history strategies and their level of Honesty-Humility. There was no significant difference between fast and slow LHS on their levels of Honesty-Humility ($F(1, 261) = 1.87, p = .173$).

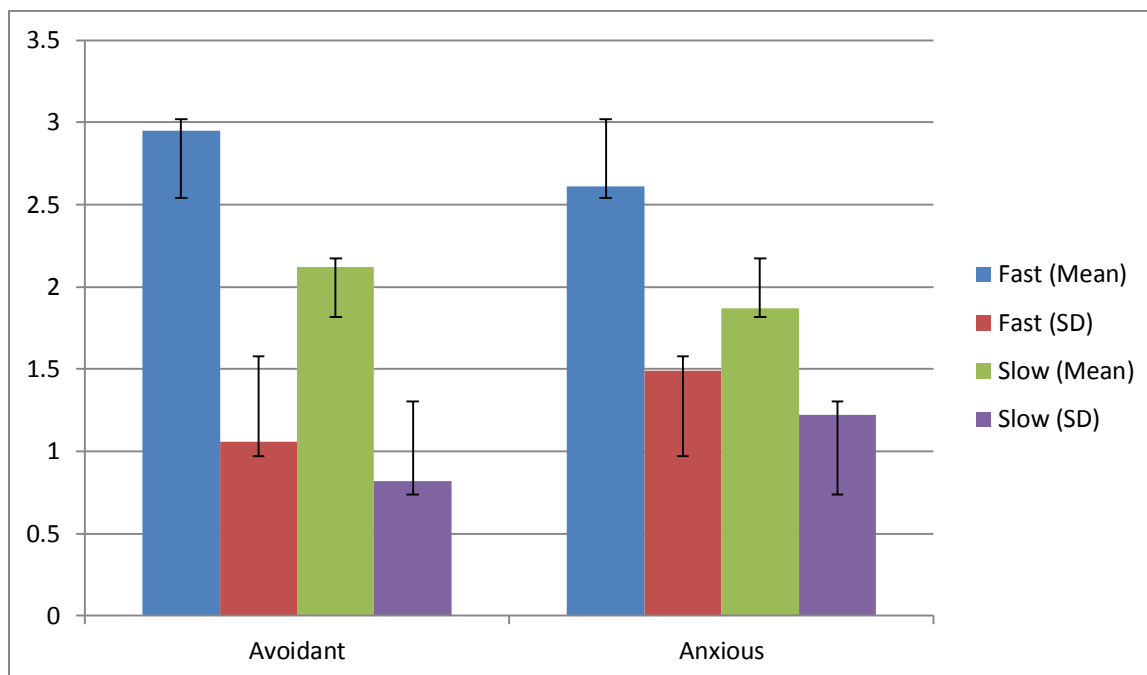
Research Question #3: Do individuals with fast and slow LHS differ on their type of attachment?

A multivariate ANOVA analysis (MANOVA) was completed with LHS (slow, fast) and SES (low, medium, high) as the independent variables and Avoidant and Anxious attachment styles as the dependent variables. For Avoidant attachment style, there was no significant interaction between LHS and SES ($F(2, 261) = .953, p = .387$). For Anxious attachment style, there was no significant interaction between LHS and SES, ($F(2, 261) = 2.45, p = .088$). Due to LHS having no significant interactions with SES, it was removed from further analyses.

A one-way ANOVA was conducted to test whether there was a significant difference between fast and slow life history strategies and their attachment style. For Avoidant attachment

style, there was a significant difference between fast and slow LHS ($F(1, 261) = 42.54, p < .05$). Participants with a fast LHS ($M = 2.95, SD = 1.06$) had higher levels of Avoidant attachment than participants with a slow LHS ($M = 2.12, SD = .82$). The Cohen's effect size value ($d = .87$) demonstrated a large significant difference. For Anxious attachment style, there was a significant difference between fast and slow LHS ($F(1, 261) = 15.56, p < .05$). Participants with a fast LHS ($M = 2.61, SD = 1.87$) had higher levels of Anxious attachment than participants with a slow LHS ($M = 1.87, SD = 1.22$). Moreover, Cohen's effect size value ($d = .46$) suggested a moderate practical significance.

Figure 2. Avoidant and Anxious Attachment means Between Fast and Slow LHS



Chapter Five: Discussion

The purpose of the present study was to apply Life History Theory to the study of bullying because it has the potential to provide further understanding of the relationship between environmental circumstances, slow or fast LHS, and bullying subtypes. Specifically, this study aimed to investigate whether engaging in more direct forms of bullying (physical and verbal) would be more consistent with a fast LHS and whether engaging in more indirect forms of bullying (relational and cyber) would be more consistent with a slow LHS. To test this, participants between the ages of 13 to 18 were primed with a mortality cue in order to signal a lower life expectancy with the goal of eliciting behaviours consistent with their Life History Strategy. Afterwards, participants responded to six hypothetical bullying scenarios.

Research Question #1: Do individuals with fast and slow LHS engage in different bullying subtypes?

The first hypothesis predicted that participants with a fast LHS who were primed with the mortality cue would engage in more direct bullying (physical and verbal) and participants with a slow LHS who were primed with the mortality cue would engage in more indirect bullying (relational and cyber). The results from the multivariate ANOVA analysis (MANOVA) demonstrated that there were no significant differences between the experimental group and the control group regarding their responses to the hypothetical bullying scenarios. Thus, the mortality prime was not effective in cueing a lower life expectancy.

In previous research, a single exposure to a mortality prime has been effective in increasing the desire for offspring (Fritzsche et al., 2007), in increasing the desire to reproduce and get married sooner (Griskevicius et al., 2011a), in making riskier financial decisions

(Griskevicius et al., 2011*b*), and in engaging in riskier sexual behaviour (Lam, Morrison, & Smeesters, 2009). Although research has shown a single exposure to a mortality prime can be effective, research also demonstrates that priming effects increase with repeated exposure (Brown, Jones, & Mitchell, 1996). Therefore, the prime in this study may need repeated exposure in order to be effective in eliciting the desired state. As well, there are other forms of mortality primes that may have been more effective, such as asking participants to write down the first sentence that comes to mind when they think of their own death (Fritzsche et al., 2007) or asking them to describe their ideas of an afterlife (Lam et al., 2009). Furthermore, the prime and hypothetical bullying scenarios were the very last questionnaires in the study. There was most likely heavy response burden due to the length of the questionnaires (Rolstad, Adler, & Ryden, 2011). This may have prompted participants to skip reading the prime article. Lastly, the developmental period of the sample may have impacted the effectiveness of the prime. The participants were between the ages of 12 to 18 years, the adolescent developmental period. During this developmental phase, it is common for adolescents to develop a sense of invincibility in which they believe that the potential consequences of their risky behaviour are unlikely to happen to them (Wickman, Anderson, & Smith, 2008). This sense of invincibility may have contributed to the ineffectiveness of the prime in eliciting a sense of mortality in the adolescent participants.

Although LHS and SES were significantly correlated, the results revealed a non-significant interaction between LHS and SES throughout the analyses. Participants with a fast LHS were not more likely to engage in direct forms of bullying whether they were from low, medium, or high SES backgrounds and participants with a slow LHS were not more likely to engage in more indirect forms of bullying whether they were from low, medium, or high SES

backgrounds. A significant correlation between LHS and SES is expected because whether an individual adopts a slow or fast LHS is determined by assessing environmental cues, such as resource scarcity. Socioeconomic status is often an environmental feature that signals resource scarcity (Griskevicius et al., 2013). Previous research has demonstrated that individuals from a lower-SES environment are more likely to adopt a faster LHS and individuals from a higher SES environment are more likely to adopt a slower LHS (Griskevicius et al., 2013; Griskevicius et al., 2011a; Griskevicius et al., 2011b). However, research has also shown that bullying tends to be weakly correlated with SES, with bullying perpetration (compared to victimization and bully-victims) having the weakest correlation (Tippett & Wolke, 2014). In addition, participants were recruited from extracurricular teams and clubs in the Niagara region, a population in which the majority is middle class or higher. This potentially explains why there was no significant interaction between LHS and SES with regards to hypothetical bullying responses.

A one-way ANOVA revealed there was no significant difference between LHS and their responses to the hypothetical scenarios. Participants with a fast LHS did not select more direct forms of bullying (physical and verbal) as their responses to the hypothetical scenarios. Relatedly, participants with a slow LHS did not select more indirect forms of bullying (relational and cyber) as their responses to the hypothetical scenarios. A possible explanation for these non-significant differences regarding the hypothetical bullying scenarios is that the scenarios may not represent realistic situations that occur in the lives of adolescents. As well, because the responses were already generated, it is possible that they cued the participants' responses by forcing them to choose a response that may not accurately represent how they would have acted in real life (Leigh & Stacy, 1994). The study may have yielded significant results if the responses were less contrived by asking an open-ended question such as "What would you have done in this

situation” (Matsui & Ikeda, 1976). This would allow participants to generate their own responses that may be more representative. Lastly, the hypothetical bullying subscales were highly correlated with each other demonstrating a significant overlap. This suggests that the subtypes were not distinct enough in their subtypes and the scenarios might have been redundant.

Due to the hypothetical bullying scenarios providing no significant results, the same analyses were repeated; however, the hypothetical bullying scenarios were replaced with the bullying subtype scales from the Multidimensional, Integrated, Contextualized Measure of Bullying, Aggression, and Victimization Questionnaire (Volk, Dane, & Marini, in press), which assesses bullying frequency in the last year. Again, LHS and SES had no significant interaction. However, the results revealed that participants with a fast LHS significantly engaged in more verbal bullying than participants with a slow LHS, with physical bullying approaching significance. Verbal bullying is considered to be a direct form of bullying because it requires the perpetrator to be face-to-face with the victim and risks detection and retaliation. As well, verbal bullying can be considered as a short-term strategy because it has more immediate power over the victim that can lead to immediate rewards. In addition, although it only approached significance, participants with a fast LHS also engaged in more physical bullying than participants with a slow LHS. Physical bullying is also a direct form of bullying and risks detection, retaliation, and physical injury (Volk et al., 2012). It is also considered a short-term strategy because it has an immediate physical power over the victim and leads to immediate rewards. As individuals with a fast LHS tend to engage in riskier behaviours, tend to utilize short-term strategies, and tend to seize immediate rewards (Griskevicius et al., 2011), engaging in more verbal bullying and physical bullying is consistent with a fast LHS. These results partially support the first hypothesis that participants with a fast LHS engaged in more direct

forms of bullying than participants with a slow LHS. However, the second part of the hypothesis predicted that participants with a slow LHS would engage in more indirect forms of bullying than participants with a fast LHS. This part of the hypothesis was not supported as participants with a fast LHS engaged in all bullying subtypes more than participants with a slow LHS. This suggests that participants with a fast LHS engaged in more direct forms of bullying as a short-term strategy to obtain gains in the three evolutionary domains. However, it also suggests that participants with a slow LHS did not engage in more indirect forms of bullying as a long-term strategy to obtain gains in the three evolutionary domains. In the present study, individuals did not differentially use bullying subtypes depending on their life history strategy, but instead individuals with a fast LHS engaged in more risky and aggressive behaviours overall. A potential explanation for these findings could be that individuals with a fast LHS invest in more overall aggressive short-term strategies (i.e. bullying) to maintain social dominance, gain resources, and advances in mating opportunities; whereas, individuals with a slow LHS invest in more prosocial long-term strategies to maintain social dominance, acquire resources and reproductive advantages. Investing in reciprocity and group cooperation may be more beneficial for a longer life expectancy.

Research Question #2: Do individuals with fast and slow LHS differ on their levels of Honesty-Humility?

The second hypothesis predicted that individuals with a slow LHS will have higher levels of Honesty-Humility and individuals with a fast LHS will have lower levels of Honesty-Humility. Although Honesty-Humility was weakly correlated with the Mini K, the analyses

revealed no significant differences between slow and fast LHS on their levels of Honesty-Humility. Therefore, this hypothesis was not supported.

Researchers have attempted to investigate whether the Dark Triad is characteristic of a fast LHS, which has led to inconsistent results (McDonald et al., 2012). Jonason, Koenig, and Tost (2010) found that the Dark Triad was negatively correlated with LHS, however this result was attenuated by the Psychopathy subscale being the only one to strongly negatively correlate with LHS. After further investigation of this finding, the researchers found that the only Mini K item (the same measure used in the present study to assess LHS) to correlate with all components of the Dark Triad was the item representing the desire to be in a long-term relationship before having sex (Jonason, Koenig, & Tost, 2010). This suggests that the common factor relating all the Dark Triad components is a short-term mating strategy. As well, psychopathy was the most strongly correlated with risk-taking behaviours. The researchers concluded that psychopathy was the component of the Dark Triad that best reflects a fast LHS because it was the most strongly correlated with indicators of a fast LHS (Jonason et al., 2010). However, not all features of psychopathy have been found to reflect a fast LHS. For example, aspects of psychopathy such as impulsivity and antisocial behaviour appear to be more consistent with a fast LHS and aspects such as low anxiety, self-esteem, and emotional stability seem to reflect a slow LHS (McDonald et al., 2012). Furthermore, Gladden, Figueredo, and Jacobs (2009) found that psychopathic attitudes were not an indicator of a fast LHS. They concluded that fast LHS and psychopathy are similar, but may be distinct strategies.

In the present study, although the hypothesis was rejected, there are still some interesting results that emerged. The Honesty-Humility factor, which has shown to best represent the core of

the Dark Triad (Book et al., 2014), was negatively correlated with being comfortable engaging in casual sex and positively correlated with desiring a long-term relationship before having sex. In other words, those with lower Honesty-Humility were more likely to be comfortable engaging in casual sex, which indicates a short-term mating strategy that is consistent with a fast LHS. Those with higher Honesty-Humility were more likely to desire a long-term relationship before engaging in sexual activity, which indicates a long-term mating strategy that is consistent with a slow LHS. In addition, Honesty-Humility was negatively correlated with all four bullying subtypes. Bullying is a form of risky behaviour (Ellis et al., 2012), therefore individuals with lower Honesty-Humility engaged in more risky behaviour, which is consistent with a fast LHS. Although there was no difference between a fast and slow LHS on their level of Honesty-Humility, Honesty-Humility was associated with indicators of LHS in the present study.

Research Question #3: Do individuals with fast and slow LHS differ on their type of attachment?

The third hypothesis predicted that participants with a fast LHS were more likely to have insecure attachment styles (high avoidant and high anxiety) and participants with a slow LHS were more likely to have secure attachment styles (low avoidant and low anxiety). The results revealed a significant difference between fast and slow LHS on their style of attachment. Participants with a fast LHS had higher levels of Avoidant and Anxious attachment styles than participants with a slow LHS; therefore, the third hypothesis was supported. This indicates that a slower LHS is associated with more secure attachment styles (low avoidance and low anxiety) and that a faster LHS is associated with more insecure attachment styles (high avoidance and high anxiety). This supports the notion that insecure attachment styles may be linked to a harsh,

unpredictable, and resource scarce environment as parents invest more care in the quantity of offspring (Del Giudice, 2009). Inconsistent parental care inclines individuals to be more likely to adopt a fast LHS. As well, a secure attachment style signals a less harsh, more predictable, and resource plenty environment as parents invest more care into the quality of offspring (Del Giudice, 2009). This in turn guides individuals to be more likely to adopt a slow LHS.

In addition, Avoidant and Anxious attachment was negatively correlated with the desire to be in a long-term relationship before engaging in sexual activity. Research demonstrates that individuals with a secure attachment are more likely to have longer relationships (Bogaert & Sadava, 2002), are less likely to engage in casual sex, and tend to have fewer sexual partners (Gentzler & Kerns, 2004). These results support the notion that individuals with a secure attachment (low avoidance and low anxiety) are more likely to adopt long-term mating strategy, a component of a slow LHS and individuals with an insecure attachment (high avoidance, high anxiety) are more likely to adopt a short-term mating strategy, a component of a fast LHS.

Typically, individuals with an insecure attachment, particularly anxious and avoidant, tend to be more involved in bullying than individuals with a secure attachment (Ireland & Power, 2004). In the present study, Anxious attachment was positively correlated with all four subtypes of bullying. However, Avoidant attachment was not significantly correlated with any subtype of bullying. Typically, individuals with an avoidant attachment withdraw and tend to distance themselves from people (Li & Chan, 2012). In this way, Avoidant attachment may not have been correlated with bullying due to this tendency to avoid social interaction. Furthermore, in a study that investigated attachment styles among bullies, victims, and bully-victims, it was found that bully-victims had higher avoidant attachment styles than bullies and victims (Ireland & Power,

2004). The present study only investigated pure bullies and this could account for the lack of significant correlations between attachment, particularly avoidant attachment, and bullying.

Implications

Theoretical. Recently, researchers have begun to examine bullying from an evolutionary perspective presenting evidence in support of bullying as an evolved adaptive strategy aimed at obtaining advances in reproduction, reputation, and resources (Volk et al., 2012). The present study was designed to contribute further evidence in support of bullying as an adaptive strategy. It was reasoned that applying Life History Theory to the study of bullying has the potential to explain how different environmental cues can influence the differential use of bullying subtypes. The present study thus provided new evidence suggesting that environmental pressures can influence how adolescents use bullying subtypes as an adaptive strategy to obtain these evolutionary advantages. This study was also designed to expand on the Life History literature by demonstrating how Life History Strategies determine individual differences in risk-behaviours, personality, and attachment. Some of the correlational results did lend support to the predicted relations between variables. However, given the lack of statistical significance from inferential statistics, we can only interpret these findings as tentative.

Practical. Anti-Bullying interventions have had mixed results, in which many studies have proved to be rather ineffective in reducing bullying in the long-term because bullying is treated as homogenous and interventions fail to acknowledge bullying as an adaptive goal-oriented strategy (Volk et al., 2012). The present study further highlights the need for interventions to take into consideration the heterogeneous nature of bullying and to incorporate elements of cost/benefit models based on evolutionary principles. This study has shown that

consideration of bullying subtypes potentially have differential uses depending on the harshness, predictability, and resource availability of the environment. The specific adaptive use of bullying subtypes may need to be targeted differently in interventions, particularly in high stress environments. While bullying may be difficult to eliminate because it leads to social, somatic, and sexual gains, interventions should teach adolescents the many benefits to be had in the use of alternative prosocial strategies that can be used to obtain these same benefits (Volk et al., 2012).

Limitations and Directions for Future Research

In the present study, there are a few limitations that should be considered, particularly the lack of heterogeneity and smaller sample size. The sample size ($N = 261$) was relatively small and was comprised mainly of Caucasian adolescents. As the majority of the effects were small, future studies with a larger sample may yield higher statistical power in order to detect these smaller effects. Furthermore, participants were sampled from extracurricular activities in Southern Ontario, which is a population with a limited range of SES. In addition, with a limited range of SES, this can also limit the variation in LHS. As there were no participants from a very low SES environment, the sample was also potentially lacking in participants with very fast LHS. As the sample was relatively homogenous and lacked variation, this limits the size of the effect and the generalizability of the results. Future studies should attempt to replicate the present study's results with a larger and more diverse sample, particularly with regards to SES, and also include measures of prosocial behaviour. By including measures of prosocial behaviour, researchers then can investigate the long-term strategies that individuals with a slow LHS may use to obtain the evolutionary-relevant goals.

Another limitation is the length and self-report nature of the questionnaires. All of the measures in the current study were self-report questionnaires; thereby limiting the results to the adolescents' perceptions. However, self-report measures have often shown to be a reliable method of assessment of personal and social interactions (Robins, Fraley, & Krueger, 2007). Due to the study taking an hour to an hour and a half to complete, this potentially increased the item response burden for participants (Rolstad, Adler, & Ryden, 2011). For future studies, it is suggested to limit the study length to an hour maximum. In addition, given the nature of some of the questionnaires (such as bullying and the sex and dating questionnaire), they may have been affected by the social desirability bias. This may have influenced participants to not answer the questions as honestly as possible.

Although parental education has shown to be a reliable indicator of socioeconomic status (Lien, Friestad, & Klepp, 2001), it has been criticized for being too limited (Braveman et al., 2005). Braveman et al. (2005) theorized that parental education is only measuring one aspect of socioeconomic status. The present study did not find any significant interactions regarding SES. This could be due to the limited measure of SES and the lack of range of SES in the sample. It is recommended for future studies to use a more multidimensional measure of SES to capture all aspects and to sample from a population with a more diverse range of SES. In addition, although the Mini K has demonstrated to be a reliable measure of LHS (Olderbak, Gladden, Wolf, & Figueredo, 2014), there are many other measures that assess LHS that should be considered for future studies, such as the High-K Strategy Scale (Gioan, 2006).

Additionally, the age range of 12-18 years could have been a factor that limited the present study. The previous studies cited that used a mortality prime involved undergraduate

student participants. It is possible that participants in the present study who were 13 years old may have responded differently to the Life History questionnaire (Mini K) as well as the mortality prime compared to the participants who were 18 years old. Although the Life History measure in the current study was modified for the adolescent age group, it is suggested for future studies to use a more appropriate LHS measure for a younger age group. Additionally, having such a wide age range may have resulted in participants being at different stages of the adolescent developmental period, specifically regarding pubertal development and sexual activity. However, as bullying is most prominent during adolescence, the wide age range was included in order to capture the highest prevalence of bullying.

Furthermore, as this study was relatively the first of its kind, MANOVAs were used as a preliminary analysis to test group differences between LHS and SES on bullying frequencies, level of Honesty-Humility, and attachment styles. Future studies in which a larger sample size is collected may expand on this research by conducting a multiple linear regression analyses in order to examine how LHS and other indicators of LHS predict bullying subtypes, personality, and attachment.

Lastly, future studies can also investigate sex differences in LHS in relation to sexual selection, mating VS parenting effort, and attachment. It would be relevant to conduct investigate sex differences with regards to mate selection as fast and slow LHS may influence how males and females select mates in different environments. For example, females with a fast LHS have been found to have more impulsive mate selection in harsh environments (Del Giudice, 2009). As well, with regards to mating VS parenting effort, there may be sex differences as females are incapable of shifting the balance between mating and parenting as much as males can (Del

Giudice, 2009). Finally, harsh environments may prompt sex differences in insecure attachment styles. Certain research has shown that in harsh environments, males are more likely to adopt an insecure attachment style that is more avoidant and females are more likely to adopt an insecure attachment style that is more anxious (Del Giudice, 2009).

Conclusion

The purpose of the present study was to investigate the engagement in bullying subtypes as an adaptive strategy by applying Life History Theory. Harshness, predictability, and resource availability are environmental cues that determine which Life History Strategy will be most adaptive for that particular environment. In turn, this Life History Strategy may determine the rates of reproduction, growth, parental investment, and aging. As bullying has shown to be an adaptive strategy, it is possible that individuals with fast and slow LHS may utilize bullying subtypes as an adaptive strategy differently. It was predicted that participants with a fast LHS would utilize direct forms of bullying as a short-term strategy to obtain advances in resources, reputation, and reproduction. In contrast, participants with a slow LHS would utilize indirect forms of bullying as a long-term strategy to obtain advantages in resources, reputation, and reproduction. The main mortality prime manipulation was ineffective, however participants with a fast LHS were found to engage in more verbal bullying than participants with a slow LHS. In conclusion, these results demonstrate that future studies should continue to examine the relationship between environmental cues, Life History Strategies and bullying subtypes.

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APPENDIX A: Demographics Questionnaire

1. How old are you? _____
2. Are you a boy or a girl? _____
3. What is your ethnic/racial background? _____

APPENDICE B: The Mini K

Please indicate how strongly you agree or disagree with the following statements. Use the scale below and write your answers in the spaces provided. For any item that does not apply to you, please enter "0."

Disagree Strongly	Disagree Somewhat	Disagree Slightly	Don't Know/ Not Applicable	Agree Slightly	Agree Somewhat	Agree Strongly
-3	-2	-1	0	+1	+2	+3

Rating	Item
	1. I can often tell how things will turn out.
	2. I try to understand how I got into a situation to figure out how to handle it.
	3. I often find the bright side to a bad situation.
	4. I don't give up until I solve my problems.
	5. I often make plans in advance.
	6. I avoid taking risks.
	7. I am often in social contact with my blood relatives.
	8. I often get emotional support and practical help to my blood relatives.
	9. I often give emotional support and practical help to my blood relatives.
	10. I am often in social contact with my friends.
	11. I often get emotional support and practical help from my friends.
	12. I often give emotional support and practical help to my friends.
	13. I am closely connected to and involved in my community.
	14. I am closely connected to and involved in my religion.

APPENDICE C: Bullying Questionnaire

Below are some questions about social relationships at school. Please answer them as honestly as you can. Your answers will be kept completely confidential, and there is no way for anyone to determine your answers about your relationship with them or anyone else.

1. In school, how often has someone much stronger or more popular made fun of you because of your religion or race last term i.e., the last school term or last 4 months)?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

2. In school, how often has someone much stronger or more popular made fun of you because of the way you look or talk last term?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

3. In school, how often has someone much stronger or more popular hit, slapped, or pushed you last term?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

4. In school, how often has someone much stronger or more popular threatened, yelled at, or verbally insulted you last term?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

5. In school, how often has someone much stronger or more popular spread rumours, or told mean lies about you, or actively excluded you last term?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week

e) several times a week

6. In school, how often has someone much stronger or more popular made sexual jokes, comments, or gestures aimed at you last term?

a) that hasn't happened

b) once or twice

c) once a month

d) once a week

e) several times a week

7. In school, how often has someone much stronger or more popular made any of the previous acts against you electronically?

a) that hasn't happened

b) once or twice

c) once a month

d) once a week

e) several times a week

8. In school, how often have you made fun of someone much weaker or less popular because of their religion or race last term?

a) that hasn't happened

b) once or twice

c) once a month

d) once a week

e) several times a week

9. In school, how often have you made fun of someone much weaker or less popular because of the way they looked or talked last term?

a) that hasn't happened

b) once or twice

c) once a month

d) once a week

e) several times a week

10. In school, how often have you hit, slapped, or pushed someone much weaker or less popular last term?

a) that hasn't happened

b) once or twice

c) once a month

d) once a week

e) several times a week

11. In school, how often have you threatened, yelled at, or verbally insulted someone much weaker or less popular last term?

a) that hasn't happened

b) once or twice

- c) once a month
- d) once a week
- e) several times a week

12. In school, how often have you spread rumours, mean lies, or actively excluded someone much weaker or less popular last term?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

13. In school, how often have you made sexual jokes, comments, or gestures aimed at someone much weaker or less popular last term?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

14. In school, how often have you made any of the acts against someone electronically?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

APPENDIX D: Sex and Dating Questionnaire

Please answer these questions about dating, love, and romantic relationships among teenagers. Dating is going out or spending time with girls (boys) you like, love, or have a crush on. Boys and girls can spend time together in many ways. Answer the questions below, to describe the types of ways you spend time together with girls (boys) after school and on weekends.

1. How often do you go to activities or events (e.g., parties, movies, sports events), after school or on weekends, with both boys and girls? (Never, Hardly Ever, Sometimes, Quite a Bit, Very Often)
2. How often do you go on dates with a girl/boy, but with a group of people? (Never, Hardly Ever, Sometimes, Quite a Bit, Very Often)
3. How often do you go on dates with a girl/boy, just the two of you? (Never, Hardly Ever, Sometimes, Quite a Bit, Very Often)
4. How many different people have you gone on dates with, just the two of you? _____
5. How interested are you in dating right now? (not at all, a little, a little interested, somewhat interested, interested, very interested)
6. Do you have a girlfriend/boyfriend right now? _____
7. How long have you been going out with your current girlfriend/boyfriend? _____
8. How often do you spend time after school or on weekends with your current girl(boy)friend? (Once a month or less, Once a week, A few times a week, Once a day)
9. How satisfying or positive is your relationship with your current girlfriend/boyfriend? (Not at all satisfying, slightly satisfying, somewhat satisfying, satisfying, very satisfying)
10. How many girlfriends/boyfriends have you had? _____
11. How long do you usually go out with a girlfriend/boyfriend before you break up? (about a week, about a month, a few months, 6 to 12 months, more than a year)
12. What is the longest period of time that you have ever gone out with a particular girlfriend/boyfriend? _____
13. How satisfying or positive have your previous relationships with girlfriends/boyfriends typically been? (Not at all satisfying, slightly satisfying, somewhat satisfying, satisfying, very satisfying)

14. If you do not have a girl(boy)friend right now, would you like to have one in the near future?

- I don't care much about girl(boy)friends right now.
- I'd like to have a girl(boy)friend but it's not that important right now.
- I would really like to have a girl(boy)friend right now.

15. How many different partners have you had a voluntary sexual experience with (i.e., more than kissing or making out) since the age of 12? _____

16. Thinking of voluntary sexual experiences that you have had since the age of 12 (i.e., more than kissing or making out), how old were you when you had this first sexual experience?

17. How many different girlfriends/boyfriends have you had a voluntary sexual experience with (i.e., more than kissing or making out) since the age of 12? _____

18. Since the age of 12, with how many different partners have you had voluntary sexual experiences without having an interest in a long-term committed relationship with this person?

19. How satisfying or positive have the voluntary sexual experiences (i.e., more than kissing or making out) that you have had since the age of 12 been? (Not at all satisfying, slightly satisfying, somewhat satisfying, satisfying, very satisfying)

20. I can imagine myself being comfortable and enjoying "casual" sex (i.e., more than kissing or making out) with different partners. (Response Options: Strongly Disagree, Disagree, neither agree nor disagree, agree, strongly agree)

21. I do not want to have sex (i.e., more than kissing and making out) with a person unless I am sure that we will have a long-term, serious relationship. (Response Options: Strongly Disagree, Disagree, neither agree nor disagree, agree, strongly agree)

APPENDICE E: Socioeconomic Status

1. Compared to the average Canadian, do you think your family is (circle one):

A lot less rich/ less rich/ about the same/ more rich/ A lot more rich

2. What is the highest level of education that your mother has completed? (circle one)

- a) some high school
- b) finished high school
- c) some college/ university/ apprenticeship program
- d) finished college/ university/ apprenticeship program
- e) finished a professional degree (e.g., Master's, Doctorate)

3. What is the highest level of education that your father has completed? (circle one)

- a) some high school
- b) finished high school
- c) some college/ university/ apprenticeship program
- d) finished college/ university/ apprenticeship program
- e) finished a professional degree (e.g., Master's, Doctorate)

APPENDIX F: HEXACO Personality Inventory-Revised (without Openness)

Please read each statement and decide how much you agree or disagree with that statement. Then write your response in the space next to the statement using the following scale. Please answer every statement, even if you are not completely sure of your response.

1 = strongly disagree 2 = disagree 3 = neutral 4 = agree 5 = strongly agree

1. I plan ahead and organize things, to avoid scrambling at the last minute.
2. I rarely hold a grudge, even against people who have badly wronged me.
3. I feel reasonably satisfied with myself overall.
4. I would feel afraid if I had to travel in bad weather conditions.
5. I wouldn't use flattery to get a raise or promotion at work, even if I thought it would
6. I often push myself very hard when trying to achieve a goal.
7. People sometimes tell me that I am too critical of others.
8. I rarely express my opinions in group meetings.
9. I sometimes can't help worrying about little things.
10. If I knew that I could never get caught, I would be willing to steal a million dollars.
11. When working on something, I don't pay much attention to small details.
12. People sometimes tell me that I'm too stubborn.
13. I prefer jobs that involve active social interaction to those that involve working alone.
14. When I suffer from a painful experience, I need someone to make me feel comfortable.
15. Having a lot of money is not especially important to me.
16. I make decisions based on the feeling of the moment rather than on careful thought.
17. People think of me as someone who has a quick temper.
18. On most days, I feel cheerful and optimistic.
19. I feel like crying when I see other people crying.
20. I think that I am entitled to more respect than the average person is.

21. When working, I sometimes have difficulties due to being disorganized.
22. My attitude toward people who have treated me badly is “forgive and forget”.
23. I feel that I am an unpopular person.
24. When it comes to physical danger, I am very fearful.
25. If I want something from someone, I will laugh at that person's worst jokes.
26. I do only the minimum amount of work needed to get by.
27. I tend to be lenient in judging other people.
28. In social situations, I’m usually the one who makes the first move.
29. I worry a lot less than most people do.
30. I would never accept a bribe, even if it were very large.
31. I always try to be accurate in my work, even at the expense of time.
32. I am usually quite flexible in my opinions when people disagree with me.
33. The first thing that I always do in a new place is to make friends.
34. I can handle difficult situations without needing emotional support from anyone else.
35. I would get a lot of pleasure from owning expensive luxury goods.
36. I make a lot of mistakes because I don’t think before I act.
37. Most people tend to get angry more quickly than I do.
38. Most people are more upbeat and dynamic than I generally am.
39. I feel strong emotions when someone close to me is going away for a long time.
40. I want people to know that I am an important person of high status.
41. People often call me a perfectionist.
42. Even when people make a lot of mistakes, I rarely say anything negative.
43. I sometimes feel that I am a worthless person.
44. Even in an emergency I wouldn’t feel like panicking.

- 45. I wouldn't pretend to like someone just to get that person to do favors for me.
- 46. I prefer to do whatever comes to mind, rather than stick to a plan.
- 47. When people tell me that I'm wrong, my first reaction is to argue with them.
- 48. When I'm in a group of people, I'm often the one who speaks on behalf of the group.
- 49. I remain unemotional even in situations where most people get very sentimental.
- 50. I'd be tempted to use counterfeit money, if I were sure I could get away with it.

APPENDIX G: Early Adolescent Temperament Questionnaire-Revised

How “true” is each statement for you?

Rating Scale:

1 = Almost always untrue, 2 = Usually true, 3 = Sometimes true sometimes untrue, 4 = Usually true, 5 = Almost always true

1. It is easy for me to really concentrate on homework problems.
2. I feel pretty happy most of the day.
3. I think it would be exciting to move to a new city.
4. I like to feel a warm breeze blowing on my face.
5. I notice even little changes taking place around me, like lights getting brighter in a room.
6. I have a hard time finishing things on time.
7. I feel shy with kids of the opposite sex.
8. It's hard for me not to open presents before I'm supposed to.
9. My friends seem to enjoy themselves more than I do.
10. I tend to notice little changes that other people do not notice.
11. When someone tells me to stop doing something, it is easy for me to stop.
12. I feel shy about meeting new people.
13. I enjoy listening to the birds sing.
14. I want to be able to share my private thoughts with someone else.
15. I do something fun for a while before starting my homework, even when I'm not supposed to.
16. I wouldn't like living in a really big city, even if it was safe.
17. It often takes very little to make me feel like crying.
18. I am very aware of noises.
19. I like to look at the pattern of clouds in the sky.
20. I can tell if another person is angry by their expression.
21. It bothers me when I try to make a phone call and the line is busy.
22. The more I try to stop myself from doing something I shouldn't, the more likely I am to do it.
23. I enjoy exchanging hugs with people I like.
24. Skiing fast down a steep slope sounds scary to me.
25. I get sad more than other people realize.
26. If I have a hard assignment to do, I get started right away.
27. I will do most anything to help someone I care about.
28. I get frightened riding with a person who likes to speed.
29. I like to look at trees and walk amongst them.
30. I find it hard to shift gears when I go from one class to another at school.
31. I worry about my family when I'm not with them.
32. I get very upset if I want to do something and my parents won't let me.
33. I get sad when a lot of things are going wrong.
34. When trying to study, I have difficulty tuning out background noise and concentrating.
35. I finish my homework before the due date.
36. I worry about getting into trouble.

37. I am good at keeping track of several different things that are happening around me.
38. I would not be afraid to try a risky sport, like deep-sea diving.
39. It's easy for me to keep a secret.
40. It is important to me to have close relationships with other people.
41. I am shy.
42. I am nervous of some of the kids at school who push people into lockers and throw your books around.
43. I get irritated when I have to stop doing something that I am enjoying.
44. I wouldn't be afraid to try something like mountain climbing.
45. I put off working on projects until right before they're due.
46. I worry about my parent(s) dying or leaving me.
47. I enjoy going places where there are big crowds and lots of excitement.
48. I am not shy.
49. I am quite a warm and friendly person.
50. I feel sad even when I should be enjoying myself, like at Christmas or on a trip.
51. It really annoys me to wait in long lines.
52. I feel scared when I enter a darkened room at home.
53. I pay close attention when someone tells me how to do something.
54. I get very frustrated when I make a mistake in my school work.
55. I tend to get in the middle of one thing, then go off and do something else.
56. It frustrates me if people interrupt me when I'm talking.
57. I can stick with my plans and goals.
58. I get upset if I'm not able to do a task really well.
59. I like the crunching sound of autumn leaves

APPENDIX H: The Experiences in Close Relationship-Relationship Structures Questionnaire (ECR-RS)

This questionnaire is designed to assess the way in which you mentally represent important people in your life. You'll be asked to answer questions about your parents, your romantic partners, and your friends. Please indicate the extent to which you agree or disagree with each statement by circling a number for each item.

Please answer the following questions about your mother or a mother-like figure.

1. It helps to turn to this person in times of need.
strongly disagree 1 2 3 4 5 6 7 strongly agree
2. I usually discuss my problems and concerns with this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree
3. I talk things over with this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree
4. I find it easy to depend on this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree
5. I don't feel comfortable opening up to this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree
6. I prefer not to show this person how I feel deep down.
strongly disagree 1 2 3 4 5 6 7 strongly agree
7. I often worry that this person doesn't really care for me.
strongly disagree 1 2 3 4 5 6 7 strongly agree
8. I'm afraid that this person may abandon me.
strongly disagree 1 2 3 4 5 6 7 strongly agree
9. I worry that this person won't care about me as much as I care about him or her.
strongly disagree 1 2 3 4 5 6 7 strongly agree

Please answer the following questions about your father or a father-like figure.

1. It helps to turn to this person in times of need.
strongly disagree 1 2 3 4 5 6 7 strongly agree
2. I usually discuss my problems and concerns with this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

3. I talk things over with this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

4. I find it easy to depend on this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

5. I don't feel comfortable opening up to this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

6. I prefer not to show this person how I feel deep down.
strongly disagree 1 2 3 4 5 6 7 strongly agree

7. I often worry that this person doesn't really care for me.
strongly disagree 1 2 3 4 5 6 7 strongly agree

8. I'm afraid that this person may abandon me.
strongly disagree 1 2 3 4 5 6 7 strongly agree

9. I worry that this person won't care about me as much as I care about him or her.
strongly disagree 1 2 3 4 5 6 7 strongly agree

Please answer the following questions about your dating or marital partner.

Note: If you are not currently in a dating or marital relationship with someone, answer these questions with respect to a former partner or a relationship that you would like to have with someone.

1. It helps to turn to this person in times of need.
strongly disagree 1 2 3 4 5 6 7 strongly agree

2. I usually discuss my problems and concerns with this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

3. I talk things over with this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

4. I find it easy to depend on this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

5. I don't feel comfortable opening up to this person.
strongly disagree 1 2 3 4 5 6 7 strongly agree

6. I prefer not to show this person how I feel deep down.
strongly disagree 1 2 3 4 5 6 7 strongly agree

7. I often worry that this person doesn't really care for me.

strongly disagree 1 2 3 4 5 6 7 strongly agree

8. I'm afraid that this person may abandon me.

strongly disagree 1 2 3 4 5 6 7 strongly agree

9. I worry that this person won't care about me as much as I care about him or her.

strongly disagree 1 2 3 4 5 6 7 strongly agree

Please answer the following questions about your best friend.

1. It helps to turn to this person in times of need.

strongly disagree 1 2 3 4 5 6 7 strongly agree

2. I usually discuss my problems and concerns with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

3. I talk things over with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

4. I find it easy to depend on this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

5. I don't feel comfortable opening up to this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

6. I prefer not to show this person how I feel deep down.

strongly disagree 1 2 3 4 5 6 7 strongly agree

7. I often worry that this person doesn't really care for me.

strongly disagree 1 2 3 4 5 6 7 strongly agree

8. I'm afraid that this person may abandon me.

strongly disagree 1 2 3 4 5 6 7 strongly agree

9. I worry that this person won't care about me as much as I care about him or her.

strongly disagree 1 2 3 4 5 6 7 strongly agree

Life in 21st Century, More Dangerous and Unpredictable Than Most Think

MORGAN JAMESTON

NIAGARA FALLS — The Globe and Mail

Published Wednesday, Dec. 06, 2015 10:05AM EST

Last updated Wednesday, Dec. 06, 2015 6:22PM EST

Jonathan Pierce, age 17, died at 5:37 am last Tuesday at St Michael's Hospital in Toronto, Ontario. The cause—a gunshot wound. Just last night, Jon was walking home from work. Suddenly, in the middle of a seemingly safe intersection that he had crossed hundreds of times, he was shot six times by a gunman in a nearby car. Police have no motive for the shooting, chalking it up to yet another random act of violence.

The staff at the police station are worried. They are astonished at the exponential increase in adolescent deaths from random acts of violence in Ontario. "Ten years ago, these kinds of deaths accounted for maybe 30 or 40 deaths a year," Joan Michaels, a captain at the police station, recalls. "Two years ago we had over 200. This year it's tripled to over 600. This increase is amazing. You just don't know what tomorrow is going to bring."

Michaels is shocked by the senselessness of many of these deaths. "It seems that at least half of these attacks occur for no reason. An innocent young man just happens to be wearing the wrong colored shirt and is gunned down by gang members. A young woman is waiting for a bus, and she's assaulted by a group of

men she's never seen before. What really gets me is that the person who dies is often too young and is not even the target. The person was just simply in the wrong place at the wrong time. Anyone is a potential victim for this new wave of violence."

Captain Michaels urges youth to take precautions and to stay safe as random acts of violence are not the only crimes that are contributing to the increase in adolescent deaths. There has also been a rise in adolescent homicide in Ontario, which Michaels speculates might be due to youth gang activity.

The high prevalence of random violence and homicide is also being seen in emerging studies from McMaster School of Medicine. Dr. Douglas Kenrick, head of the research project, notes a worrisome pattern: "Comparing violent crime across the last century, we find that it is very difficult to predict what's going to happen from year to year. For example, adolescents today are at a much higher risk of being violently assaulted and killed than adolescents merely a few years ago." The evidence shows that our cities, neighborhoods, workplaces, and schools are essentially under attack. "This has important implications," Dr. Kenrick points

out. "Because you never know what's going to happen and how this will impact the futures of adolescents."

The risks associated with random acts of violence only intensify the terrorism threat that has been growing over the past few weeks. Patricia Wharton of the Federal Bureau of Investigations points out that there is a growing fear within the younger generations due to the recent terrorist attacks in Paris, France. "These horrible attacks have created a sense of fear in the lives of Canadian youth. They don't feel safe going out anymore."

The random acts of violence are especially increasing in schools. Just a few years ago, it was almost unheard of that someone would be shot at school. Today, this is part of normal life. "The Police can't be at every corner of every street," notes captain Joan Michaels. "More and more, citizens find themselves injured or even dying on the street for reasons beyond their control and for no distinct purpose."

Random acts of violence are not the only increasing concern in schools for youth today. High schools in Ontario, specifically in the Niagara region, have also reported increases in bullying. More and more adolescents are becoming victims of bullying. Director of Education for the District School Board of Niagara, George

MacDonald, had this to say: "We are currently investigating what is causing this increase in bullying because it is a serious problem that impacts the lives of our students."

The youth residing in Ontario are facing difficult times and it does not seem like it will be getting better any time soon. There are many more problems adolescents are dealing with on a daily basis. Cities such as Toronto and London are experiencing a terrifying upsurge in youth homelessness and drug and alcohol addictions. A social worker in London named Tracy Jones speculates that some of these problems are caused by the rising rates of unemployment. "It is getting harder and harder for adolescents these days to find a job. The financial security of youth is becoming uncertain."

As Jonathan Pierce waits to be buried after being the latest victim of random violence, we can't help but be reminded about the unpredictability of the world in which we live. Whether it is random acts of violence, bullying, or high unemployment rates, the ability to predict what next year—or even tomorrow—will bring is impossible. Adolescents need to brace themselves for a new reality in this unpredictable and dangerous world as they face an uncertain future.

Where are my keys?!

MORGAN JAMESTON

NIAGARA FALLS — The Globe and Mail

Published Wednesday, Dec. 06, 2015 10:05AM EST

Last updated Wednesday, Dec. 06, 2015 6:22PM EST

Imagine that it's a Tuesday afternoon during your first semester of college. Your classes are pretty difficult this semester and you've been getting stressed out about everything that you need to do. You're hanging out at home doing homework, but it's getting boring and you're feeling tired. You know that you still have to go to the supermarket before it closes, so you decide to call it a night and go to the store.

You put on your shoes and grab your wallet. As you go to get your keys from the counter, you don't see them there. The keys are nowhere in sight. Thinking that it's a little strange, you check your pockets. No keys in there either. You try to retrace your steps to where you last saw the keys, but you can't remember. You know you had them yesterday after you came home from work, and you're usually pretty good about leaving your keys right on the counter.

You sometimes put your keys in your backpack, so that seems like the next logical place to look. You search through your bag. You take out books, folders, pens, but no keys. You turn the bag upside down and shake it. Nothing. Now you start getting a little annoyed, and a little worried. Where the heck are your keys?

You decide to search around the house. First, you look all around your desk. You open the drawers. But to no avail you find only pencils and paper. Next, you look through the junk on your bedroom floor, but all you find is old homework, an empty bag of chips, and your work uniform. After that, you take off all the pillows and blankets off of your bed. No keys.

Getting more desperate, you look through your dirty laundry. Maybe they're in another pocket somewhere? You find some pieces of paper, but no keys. Feeling angrier, you go into your closet and start throwing your clothes on the floor. No keys there either. You look under your bed, but still nothing. After putting everything back in your closet you decide the keys must not be in your room. You run to the kitchen and start looking on the counters. You open all the cupboards and drawers. You have no idea why the keys would be there, but you need to look somewhere. In fifteen minutes, your kitchen looks like a disaster area. But still no keys!

Next you go into your living room and start taking off the cushions from the couch. You find a few pennies, but no keys. You look under the coffee table; however there is nothing there either.

You're starting to feel a little more frustrated at this point. Your hands start to shake a little. You think back to when you last remember having the keys and try to retrace your steps. You clearly remember having them earlier, but you just don't know where you put them.

Remembering that you had gone outside to take out the garbage earlier, you run out into the driveway. Maybe the keys fell out there? You look in the grass, the bushes, underneath cars. You see nothing. You think to yourself: did I really lose my keys? As you walk back inside the house in complete frustration, you feel as though you're ready to pull your hair out. Your keys have disappeared. You knew this was coming sometime, but why now? You start thinking about what you need to do when someone loses their keys. It's so annoying. You just wanted to go to the store.

As a last resort you take out your phone and text your roommate hoping she will answer. You ask her if she has seen your keys lying around the apartment. After a few minutes she answers. She said she

hasn't seen them recently, but suggests to check all of your coat pockets. You walk over to the coat rack and empty out all of your coat pockets. There are still no keys.

You plop onto your living room couch in defeat. Sighing, you look back to the counter where you normally put your keys. To your astonishment, you see them. Your keys are on the floor in front of the counter! How could you have missed them? You run over there to check it out. You can't believe it. You must have dropped them. Something like this always happens to you. You think to yourself that maybe it's time to get some glasses.

You sit down to take a breather, shake your head, and put your hand on your chest. Wiping the sweat that was beginning to form on your forehead, you begin to laugh. You don't think you've ever felt so relieved in your life. It was just keys, but you had gotten so upset. Your relief quickly turns into elation. You only found your keys, but it's as though you won the lottery. Feeling better, you finally leave to go to the store and lock the door behind you.

APPENDIX K: Hypothetical Bullying Scenarios

Instructions: Please read the following scenarios very carefully and rate each answer on a scale of 1-5 on how likely you are to do each response in that particular situation.

Scenario 1: You are eating lunch with your friends in the school cafeteria. One of your friends' is eating a chocolate bar and you really want it. However, there is a teacher nearby monitoring the cafeteria. To get the chocolate bar you decide to:

A) "Accidentally" bump into your classmate so that they drop the chocolate bar and grab it while they are not looking

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

B) Spread a rumour that they are overweight

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

C) Forcefully tell them to give you their chocolate bar

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

D) Post comments about their weight on their Facebook photos

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

Scenario 2: The new iPhone 6 just came out with a new gaming app that you really want to try, but your parents can't afford to buy you one. You remembered your friend just got one for their birthday. As you see them in the hall on the way to class, you ask them if you can borrow their iPhone for the night so you can play the new gaming app. Your friend says no, so you decide to:

A) Post Facebook statuses saying how they won't lend you their phone

- 1 – Extremely unlikely

- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

B) Grab their Iphone from them

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

C) Tell them they're being a bad friend for not letting you borrow their iPhone

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

D) Do not talk to them until they let you borrow it

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

Scenario 3: The Spring Fling Dance is quickly approaching and you haven't asked anyone to be your date yet. Your friend has already asked your crush and they are going to the dance together. You really want to go to the dance with your crush so to try and win your crush over you decide to:

A) Tell your friend you won't be their friend anymore if they go to the dance with your crush

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

B) Tell your friend that their date is out of their league

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

C) Post an embarrassing photo of your friend on Facebook to make them look unattractive

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

D) “Accidentally” trip your friend in front of your crush so that they look clumsy

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

Scenario 4: You just found out that you and your friend like the same person. You have had a crush on this person for over a year, so to try and get them to date you instead of your friend, you decide to:

A) Put down your friend in front of your crush to make yourself look better

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

B) Spread a rumour about your friend that they have slept with multiple members of the football team

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

C) During gym class, throw a dodgeball at them really hard and glare at them to get them to back off

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

D) Log into their Facebook account and delete your crush as a friend

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral

- 4 – likely
- 5 – Extremely likely

Scenario 5: Prom is almost here and you really want to be voted Prom Queen/King. To try to get more people to vote for you, you decide to:

A) Harass your friends on Facebook every day to get them to vote for you

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

B) Tell people that something bad might happen to them if they don't vote for you

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

C) Tell people they won't be invited to parties anymore and no one will like them if they don't vote for you

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

D) Lock them in a bathroom stall on Prom night so that they can't vote

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

Scenario 6: You want to be the person with the most "likes" on Facebook in school so to get more "likes" on your Facebook photos you decide to:

A) Pinch your friend until they like your photos

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

B) Tease your friends that they will be losers unless they help you become more popular

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

C) Send your friends multiple text messages to pressure them to like your photos

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

D) Threaten your friends that you will reveal all of their secrets if they don't like your photos

- 1 – Extremely unlikely
- 2 – unlikely
- 3 – Neutral
- 4 – likely
- 5 – Extremely likely

APPENDIX L: Brock University Ethics Clearance



Brock University
Research Ethics Office
Tel: 905-688-5550 ext. 3035
Email: reb@brocku.ca

Social Science Research Ethics Board

Certificate of Ethics Clearance for Human Participant Research

DATE: 2/5/2016
PRINCIPAL INVESTIGATOR: VOLK, Anthony - Child and Youth Studies
CO-INVESTIGATOR(S): Angela Book; Andrew Dane; Zopito Marini; Elizabeth Shulman
FILE: 15-173 - VOLK
TYPE: Undergraduate STUDENT: Ann Farrell
Masters Thesis/Project SUPERVISOR: Anthony Volk
TITLE: Adolescent Social Relationships

ETHICS CLEARANCE GRANTED

Type of Clearance: NEW

Expiry Date: 2/28/2017

The Brock University Social Science Research Ethics Board has reviewed the above named research proposal and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement. Clearance granted from 2/5/2016 to 2/28/2017.

The Tri-Council Policy Statement requires that ongoing research be monitored by, at a minimum, an annual report. Should your project extend beyond the expiry date, you are required to submit a Renewal form before 2/28/2017. Continued clearance is contingent on timely submission of reports.

To comply with the Tri-Council Policy Statement, you must also submit a final report upon completion of your project. All report forms can be found on the Research Ethics web page at <http://www.brocku.ca/research/policies-and-forms/research-forms>.

In addition, throughout your research, you must report promptly to the REB:

- a) Changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- b) All adverse and/or unanticipated experiences or events that may have real or potential unfavourable implications for participants;
- c) New information that may adversely affect the safety of the participants or the conduct of the study;
- d) Any changes in your source of funding or new funding to a previously unfunded project.

We wish you success with your research.

Approved:



Kimberly Maich, Chair
Social Science Research Ethics Board

Note: Brock University is accountable for the research carried out in its own jurisdiction or under its auspices and may refuse certain research even though the REB has found it ethically acceptable.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and clearance of those facilities or institutions are obtained and filed with the REB prior to the initiation of research at that site.

APPENDIX M: Sample Email Sent to Organizations

Dear EXTRA CURRICULAR ORGANIZATION,

My name is Melanie and I am a Graduate Student at Brock University in the Department of Child and Youth Studies. I am working with a team of faculty and student collaborators on a research study involving adolescents between the ages of 13 and 18. We are interested in what affects adolescent relationships, including parents, friends, and personality.

As a result, we are interested in asking the members of your organization to participate in our study. Participation is purely voluntary, but before they can participate, they must obtain parental consent. To do so, we provide an envelope that contains a parent permission form, and an assent form (for adolescents to sign) and website link for adolescents to fill out the survey. Those who return completed consent forms and complete the surveys will receive \$15 cash for their participation.

No personal information is collected on any of the forms, so their confidentiality, and the confidentiality of your organization, is preserved. We therefore can't provide you with specific feedback regarding bullying in your organization, but we can provide you with the overall results of our study after it is completed. Specifically what we would need from you and your organization is a time to come in and talk to your members about participating in the study. At this point we will explain the study, answer any questions they have, and pass out the forms. It shouldn't take longer than 10 minutes. We will then arrange for a time to return to your organization about a week later to pick up any completed forms and answer any further questions, comments, or concerns that they may have.

If you have any questions about this study, please feel free to contact me or the Primary Faculty Investigator, Dr. Tony Volk at tvolk@brocku.ca or 905-688-5550 Ext. 5368.

Please let me know if you are interested in allowing us to visit your organization for participation in our study. You can contact me via email (mb14xc@brocku.ca) or call me by phone (519-890-4591).

Thank you for your time and consideration.

Sincerely,
Melanie Bastien

APPENDIX N: Verbal Script for Participant Recruitment

My name is Melanie and I am a Graduate Student at Brock University in the Department of Child and Youth Studies. We are doing an experiment to better understand what affects adolescent relationships, including parents, friends, and personality. For instance, we are interested in how an adolescent's individual traits, such as personality, influence the likelihood that they will be a bully and/or a victim.

We are looking for people between the ages of 13 and 18 who are interested in filling out questionnaires online using a link that we can provide. It will take about an hour to finish these questionnaires, and you will receive \$15 cash after completing them.

If you are interested, we first ask that you get your parents to complete a permission form, and that you complete a form for yourself as well. These forms include all the information that you need. We need both forms completed in order to use your questionnaires. You can take these forms home with you, and there is a link that you must enter to access the questionnaire. Each form also has a unique identification number that you will need to enter on the questionnaire. We ask that you complete these questionnaires in private and alone, so that no one else will see your responses. If at any point you have any questions about what the questionnaires mean, or any problems, feel free to email or call the number on the permission forms. You will need to complete these questionnaires in one sitting. If you stop, you will not be able to return to your questionnaire.

We will come back next week to collect your permission forms. We will not be able to use your answers if you do not have both forms signed. Please complete the questionnaire by that time so that we can check online whether you completed the forms. When we have proof that you completed them, and you return these forms, we will give you the \$15.

All of these responses are confidential and the only ties to you will be a unique ID number. The number will only be used to confirm that you have participated so that you can receive the \$15 cash for participating. The only other time this ID will be tied to you is in the event you want to withdraw participating. The ID number will be used to find your responses so that we can delete them. No one but the researchers will see the responses. Participation is also voluntary and you can withdraw at any time. There are no legal consequences for participating so you may be honest in your responses.

APPENDIX O: Invitation to Extra Curricular Activities

Dear EXTRACURRICULAR ORGANIZATION

My name is Dr. Anthony Volk. I am a professor of Child and Youth Studies at Brock University. I am currently working with a team of faculty and student collaborators in a study of adolescent relationships. We are particularly interested in how extracurricular participation influences experiences of bullying and relationships in adolescents. As a result, we are interested in asking the members of your organization to participate in our study. Participation is purely voluntary, but prior to participating in the study, your members must obtain parental consent. To do so, we provide a sealed envelope for the parents that contain an information form, a permission form, and another sealed envelope that contains an assent form and website link to Qualtrics, an online survey website for adolescents to fill out. Those who return completed consent forms will receive \$15 cash for their participation. If parental consent is denied, the members still receive the money, but we don't use their data. The questionnaires are private, and they ask your members to discuss their social relationships with their parents and friends, and also on their own personality and individual characteristics.

No personal information is collected on any of the forms, so their confidentiality, and the confidentiality of your organization, is preserved. We therefore can't provide you with specific feedback regarding bullying in your organization, but we can provide you with the overall results of our study after it is completed in 2016. We do provide information regarding resources (including our lab) that the participants can access should they be experiencing problems with bullying.

Specifically what we would need from you and your organization is a time to come in and talk to your members about participating in the study. At this point we will explain the study, answer any questions they have, and pass out the forms. We will then arrange for a time to return to your organization to pick up any completed forms and answer any further questions, comments, or concerns that they may have.

If you have any questions about this study, please feel free to contact me **at** tvolk@brocku.ca or **905-688-5550 Ext. 5368**, or the Brock University Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca. The Research Ethics Board has provided ethic clearance for this study. If you are interested in allowing us to come and talk to your members, please let us know.

Thank you very much for your consideration of our request!

☐ Yes, I am interested in allowing you to present your study

☐ No, I am not interested in allowing you to present your study

Signed : _____

Date: _____

APPENDIX P: Adolescent Assent Form

Adolescent Relationships

Principal Investigator:

Dr. Anthony Volk, Professor

Department of Child and Youth Studies

Brock University

905-688-5550 xt. 5368

tvolk@brocku.ca

INVITATION

You are invited to participate in a study on adolescent relationships. The purpose of this study is to better understand how adolescent relationships are influenced by various aspects of their personal and social lives, such as personality, school, peers, and parents. We would like to note that a small number of the questions are about violence, sexual activity and related behaviors.

WHAT'S INVOLVED

As a participant, you will be asked to fill out questionnaires about yourself, your social group, and your basic demographics (e.g., things like age, who you live with, etc.) online using the link provided for Qualtrics, a questionnaire website. It should take you about 45-50 minutes to complete the forms. You will need to complete these questionnaires in one sitting. If you close the website or stop in the middle, there will be no way to return to the questionnaire. Only the researchers will see these responses, and the only ties to participant names will be a unique Identification (ID) number that will be used to confirm participation so that you can receive \$15 cash for participating. The ID number will not be linked to any other responses to the questionnaires. They will only be linked to participant names on the consent forms, which will be stored separately in a filing cabinet separate from questionnaire responses. The original consent form, which includes the unique identification number, will only be removed from the filing cabinet in the event that the participant chooses to withdraw from the study. In such an event, the removed identification number will be used to identify the participant's response in the questionnaire database, and the data will be deleted.

POTENTIAL BENEFITS AND RISKS

Possible benefits of participation include getting to know your own relationships better, and learning about adolescent relationships in general through reflection on some of your own experiences. There also may be risks associated with participation. Some relationships are tough to think about. If you find any part of this study to be stressful, you may contact the researcher, the Brock University Ethics board, or simply stop your participation. You may also freely discuss the study with parents or friends if you need to, although we would ask that you try not to talk to someone before they complete the study on their own (e.g., don't share answers until both of you have completed the study unless you feel it's really necessary). Sharing answers before the study ends can distort and/or change your own natural answers.

We do not ask for any specific incidents or events, so **there is no personal or legal liability associated with any of your answers, nor are we legally obligated to disclose any of your answers to our questions (including abuse and harm)**. If you have any concerns about specific behaviours or incidents, we strongly suggest that you discuss them with trusted individuals. These individuals could be parents, teachers, friends, or other trusted adults. You may also contact the Kids Help Phone at: <http://www.kidshelpphone.ca/en/> (1-800-668-6868). It is important to know that you do not need to tolerate any form of abuse!

You will receive \$15 cash for your participation in this study. You will receive this payment once you have completed the questionnaires and returned the consent and assent forms. Once receiving the \$15, you will have to sign a sheet for our records indicating you have received the payment.

CONFIDENTIALITY

You will only be identified by a unique number that is tied your name. There is no way for anyone to identify the data beyond this number. Unique, identifiable data (such as exact date of birth, name, names of friends and family) will not be collected. Your parents will have to consent to your participation, **but they will not be able to read your answers** (*although they can request that any such data be deleted*). You also do not have to reveal your answers to any of your friends, peers, or anyone else other than the researchers in this study. The only exception is that Dr. Volk will have a copy of your consent form, with your participation number, stored in a password protected computer in his lab, so that you can later request that your data be removed from the study if you wish. No other individual will have access to this link to your name, and Dr. Volk will ONLY access this information if you contact him asking to remove your data from the study within 5 years. Your name or ID will in no other way be involved with the data analysis or presentation.

Data collected during this study will be stored on a secure computer. Data will be kept for five years, after which time the data will be deleted or shredded. Access to this data will be restricted to Dr. Volk and his collaborators, who have signed confidentiality agreements. Your parents, friends, participants, and coaches will not have access to any individual data, although they may have access to the overall study results. So you do not have to worry about anyone finding out your answers, or about anyone following up on your answers, or about any consequences of the answers you provide. Your responses will be confidential and the only links between your name and ID number will be stored separately from your questionnaire responses, with access only by Dr. Volk.

In order to best protect your confidentiality, we suggest completing the online questionnaires in private and on your own. This will limit the possibility of others (e.g., parents, siblings, friends) from seeing your responses.

The researchers will own all data collected through Qualtrics and therefore all information will be confidential. Qualtrics data are temporarily stored in the United States and therefore is subject to the Homeland Security or Patriot Act. However, data will be downloaded daily on a secured Canadian server onto a password protected lab computer. Once data is downloaded in the lab, the data will be immediately deleted off from Qualtrics.

VOLUNTARY PARTICIPATION

Participation in this study is purely voluntary. Whether you participate, or what questions you answer, is completely up to you. If you want to withdraw from this study at any time, you may do so without any penalty other than not receiving the \$15 and your data will be confidentially destroyed in the event of withdrawal. This research is not linked to your organization, so there is no organizational penalty if you do not participate. If you would like to withdraw your data after you have completed the study, you must provide your unique identification number as it is the only way we have to identify your data. Please keep your ID number attached to this sheet in a safe place in case you wish to withdraw from the study.

However, before you can participate in this study, you **MUST** obtain parental consent. If you are reading this form, you should have already obtained parental consent. If you haven't, please provide your parents with the appropriate forms immediately. If you do not provide parental consent, you may NOT participate in this study. Again, your parents will not have direct access to your answers, but they do control whether WE are able to see your answers or not. If your parents do provide consent, you are not obligated to participate. That is your own decision. So you need their consent to participate, but that consent doesn't force you to participate.

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be available by late Spring or Early Summer on Dr. Volk's research web page (<http://www.brocku.ca/volk-developmental-science-lab>).

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please contact Dr. Volk using the contact information provided above. You can also use this contact information if you have any questions about what the questionnaires mean, or if you need any help completing the questionnaires. If you have any questions while you are filling out the forms, please feel free to contact Dr. Volk. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University # 15-173 VOLK. If you experience any stress while participating in this study, please refer to debriefing form for a list of agencies you may contact.

If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

LINK TO QUALTRICS

If you are interested in participating, please follow this link to the Qualtrics website and use the following password to proceed:

Link: **<https://goo.gl/LWcMKK>**

Your ID number:

Thank you for your help in this project!

Please keep this form for your records.

ASSENT FORM

I agree to participate in this study described above. I have made this decision based on the information I have read in the Information-Assent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this assent at any time.

Name: _____

Signature: _____ Date: _____

ID number:

Would you like to be contacted for follow-up studies in the future?

Yes: _____

No: _____

If Yes, please provide your e-mail address:

Please return this form.

Adolescent Relationships Parental Form

Please keep this form for your records.

Principal Investigator:

Dr. Anthony Volk, Professor

Department of Child and Youth Studies

Brock University

905-688-5550 xt. 5368

tvolk@brocku.ca

INVITATION

Your son/daughter has been invited to participate in a study that involves research into adolescent relationships. The purpose of this study is to better understand how adolescent relationships in one domain (e.g., parents) influence their relationship in another (e.g., personality, school, or peers). What follows are the specific goals of the study.

We are interested in exploring factors associated with adolescent social relationships including personality, peer relationships, and school factors. For instance, we are interested in how an adolescent's individual traits, such as personality, influence the likelihood that they will be a bully and/or a victim. So far, no one has looked at most of these factors in teenagers, and no one has looked at the combination of all these factors. We believe that answering these questions will give us a much better idea of what factors are involved in adolescent social relationships. We would like to note that a small number of the questions are about violence, sexual activity and related behaviors.

WHAT'S INVOLVED

As a participant, your son/daughter has been asked to fill out questionnaires about themselves, their friends, their peers, their parents, and their basic demographics (e.g., age) on an online survey website. Participation will take approximately 45-50 minutes of their time. Only the researchers will see these responses, and the only ties to participant names will be a unique Identification (ID) number that will be used to confirm participation so that participants can receive \$15 cash for participating. The ID number will not be linked to any other responses to the questionnaires. They will only be linked to participant names on the consent forms, which will be stored separately in a filing cabinet separate from questionnaire responses. The original consent form, which includes the unique identification number, will only be removed from the filing cabinet in the event that the participant chooses to withdraw from the study. In such an event, the removed identification number will be used to identify the participant's response in the questionnaire database, and the data will be deleted.

POTENTIAL BENEFITS AND RISKS

Possible benefits of participation include getting to know their own relationships better, and

learning more about adolescent relationships in general through reflection on some of the participants' own relationships. There also may be risks associated with participation in that some relationships are stressful to think about. If they find any part of this study to be stressful, they may contact the researcher, the Brock University Ethics board, or simply stop their participation. We also tell your son/daughter that "[they] may also freely discuss the study with parents or friends if [they] need to, although we would ask that [they] try not to talk to someone before [they] complete the study on [their] own (e.g., don't share answers until both have completed the study). Sharing answers before the study ends can complicate and/or change their own natural answers. We do not ask any specific questions regarding specific incidents, **so there are no issues of personal or legal liability for any of your son/daughter's answers, nor are we legally obligated to disclose any of their answers (including abuse or harm) to our questions.**

All participants will be offered \$15 cash for their participation. They will receive this payment once the completed forms are returned. Once receiving the \$15, participants will have to sign a sheet for our records indicating you have received the payment.

CONFIDENTIALITY

Participants in this study will only be identified by a unique number that is tied to a master list kept by Dr. Volk. You, or they, may request the withdrawal of their data from the study within 5 years of their participation. Unique, identifiable data (such as date of birth, names) will not be collected.

As a parent, you will have to consent to your son/daughter's participation, **but you will not gain access to their answers. You may only control whether WE are able to view their answers or not by providing or withdrawing your consent.** *We feel that it is very important for the participants in our study to be able to know that their answers are completely confidential.* This will hopefully encourage them to be as honest as possible so we can really understand what is going on in their relationships. To this end, we again ask that you don't discuss the study with your son/daughter until they have completed it in order to avoid biasing their answers. Once the study is completed (i.e., after they have filled in and handed in the forms), you may of course discuss any related topic you feel fit. In the final form explaining the study, we encourage participants to talk to people whom they trust (including parents) about any related issues.

Data collected during this study will be stored on a secure computer and hard copies of forms will be kept in a locked filing cabinet. Data will be kept for five years, after which time the data will be deleted. Access to this data will be restricted to Dr. Volk and his collaborators, who have signed confidentiality agreements. Parents, friends, and participants will not have access to any individual data, although they may have access to the overall study results.

The researchers will own all data collected through Qualtrics and therefore all information will be confidential. Qualtrics data are temporarily stored in the United States and therefore is subject to the Homeland Security or Patriot Act. However, data will be downloaded daily on a secured Canadian server onto a password protected lab computer. Once data is downloaded in the lab, the data will be immediately deleted off from Qualtrics.

VOLUNTARY PARTICIPATION

Your teenager's participation is voluntary. They need not participate, even if you give parental consent. There are no organizational or personal consequences for not participating other than not receiving the \$15. **Again, as a parent, you do NOT have access to your adolescent's individual results. You control whether or not we are able to view them by providing or withdrawing your consent for their participation.** In the event of withdrawal, data will be confidentially destroyed.

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be available by late Spring or Early Summer on Dr. Volk's research web page (<http://www.brocku.ca/volk-developmental-science-lab>).

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions or concerns about this study, please contact the study coordinator, Dr. Volk, using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University #15-173. If you have any comments or concerns about the study ethics, or your adolescent's rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

If you have any concerns about your adolescent participating as a bully, or being a victim of bullying, please feel free to discuss the matter with other parents, teachers, friends, and/or any trusted individuals. For advice on how to talk to your teen or other individuals about bullying, we recommend www.bullying.org, <http://www.lfcc.on.ca/bully.htm>, and the Niagara Youth Connection (905-641-2118 ext. 5592). You may also feel free to contact me, Dr. Anthony Volk, at tvolk@brocku.ca (905-688-5550 ext. 5368) with any related questions or concerns.

Thank you for your help in this project!

Please keep this form for your records.

CONSENT FORM

I agree to allow my teen to participate in this study described above. I have made this decision based on the information I have read in the Information-Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time and request that my son/daughter's data be removed from the study.

Name: _____

Signature: _____

Date: _____

Do you agree to allow your teen to be contacted via e-mail and participate in follow-up studies in the future?

Yes: _____

No: _____

Please return this form.

APPENDIX R: Debriefing Form

PLEASE READ THIS ONLY AFTER YOU HAVE FINISHED THE STUDY

Adolescent Relationships Debriefing

Thank you for your participation in our study of adolescent relationships! As you can tell from the many forms, we are interested in a wide range of relationship details, personal constructs, and social environments. For instance, we are interested in how an adolescent's individual traits, such as personality, influence the likelihood that they will be a bully and/or a victim. It is our belief that an understanding of all these factors together will help us learn about topics such as: bullying; antisocial behavior; school achievement; parenting; etc. If you have any specific questions or concerns about the study, please feel free to ask them now. Very little research has been done on this topic, which we feel is an important one.

Parts of this study may have been uncomfortable and/or difficult to complete. Bullying and victimization are unfortunately a common experience for many adolescents, but they aren't pleasant. If you have any concerns about participating as a bully, or being a victim of bullying, please feel free to discuss the matter with your parents, teachers, friends, and/or any trusted individuals. We can recommend www.bullying.org, <http://www.kidshelpphone.ca/en/> (1-800-668-6868), and Niagara Youth Connection (905-641-2118 ext. 5592). In general, you can help prevent bullying by: not participating as a bully, intervening when others are being bullied (e.g., report that behaviour to an adult), and by actively disapproving of the bully's behaviour (e.g., telling them it's not cool). You may be able to reduce victimization by: talking to your parents, teachers, and/or friends and by trying to make supportive friendships.

As stated in the briefing letter we asked you to keep, we hope to publish some of the results on Dr. Volk's web page at: www.brocku.ca/volklab.

Should you have any further questions or concerns, you may freely contact the study coordinator, Dr. Anthony Volk at (905) 688-5550 ext. 5368 (tvolk@brocku.ca) or if regarding the study's ethics, the Brock University Research Ethics Board at (905) 688-5550 ext. 3035 (reb@brocku.ca).

Please keep this form for your records.